

Arithmetic We Need




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GRADE 3

Arithmetic We Need

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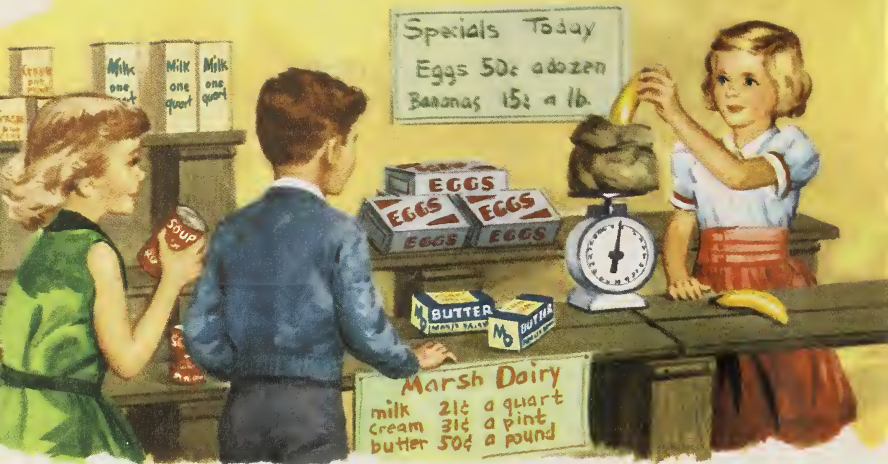
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GINN AND COMPANY • TORONTO





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On the Way to School

Meaning of group [O]

1. Andy said, "I see a **group** of red planes and a **group** of blue planes!" Look at the big picture. Tell how many planes Andy saw in each group.

2. Picture A shows the planes together. How many planes are in this new group?

3. Mary said, "I see 4 boys waiting for 2 more boys." In the big picture, find the group of 4 boys. Now find the group of 2 boys.

4. Picture B shows the boys together. How many are in the new group?

5. Ann said, "I see 3 black-and-white cows and 3 brown-and-white cows." How many cows in all did she see?

6. Find other groups in the big picture. Tell how many things you see in each group.

7. It is fun to use numbers to tell how many there are in a group. Find groups in your room and tell about them with numbers.



Two or more things together are a group.

Numbers tell how many there are in groups.

Can You Make Number Stories?

Meaning of addition [O]

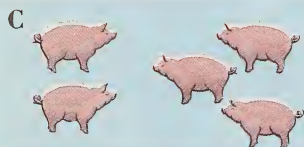


1. Picture A shows groups of dogs. How many groups are there?



2. In picture B, the dogs are together. Finish the story that tells how many dogs in all.

2 dogs and 2 dogs are $-?$ dogs.



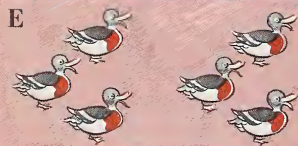
3. How many groups of pigs are there in picture C? How many pigs in all are there in picture D?



2 pigs and 3 pigs are $-?$ pigs.

[W]

4. Pictures E and F show a picture story about ducks. Write the number story to tell how many ducks in all.



Make a picture for each of these. Then write the number story to tell how many in all.

5. 1 bell and 3 bells

6. 4 cups and 2 cups

7. 3 balls and 2 balls

When you find how many in all, you put groups together.

Writing Number Stories a Short Way

Ways to express addition [O]

1. Picture A shows two groups. In B, the groups are together in one put-together group. Tell the story.

Are the animals in all three groups ponies?

The short way to write the story for pictures A and B is $2 + 3 = 5$.

The sign $+$ means **and**.

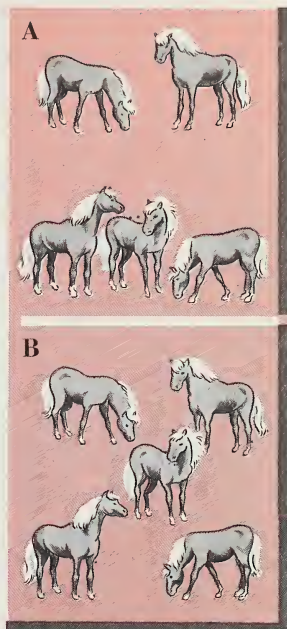
The sign $=$ means **are** or **equal** or **are the same as**.

For $2 + 3 = 5$, we say:

2 and 3 are 5.

2 and 3 equal 5.

2 and 3 are the same as 5.



[W]

Write these the short way:

- | | |
|---------------------|-------------------------------|
| 2. 2 and 2 are 4. | 5. 3 and 3 are the same as 6. |
| 3. 2 and 4 equal 6. | 6. 5 and 1 equal 6. |
| 4. 3 and 2 are 5. | 7. 1 and 3 are the same as 4. |

How many in all? Write just the answers. If you need help, make dot pictures like this one for $4 + 2$.



- | | | |
|-----------------|-----------------|-----------------|
| 8. $4 + 2 = ?$ | 11. $2 + 3 = ?$ | 14. $1 + 5 = ?$ |
| 9. $3 + 3 = ?$ | 12. $5 + 1 = ?$ | 15. $1 + 4 = ?$ |
| 10. $2 + 4 = ?$ | 13. $2 + 2 = ?$ | 16. $1 + 3 = ?$ |

(three) 3

Pairs of Put-Together Stories

Review of addition [O]

1. Tell why these two put-together stories may be used for picture A:



2 drums and 4 drums are 6 drums.

4 drums and 2 drums are 6 drums.

2. On the board write this pair of stories about drums the short way. Use numbers and signs.

$$2 + 4 = 6 \quad 4 + 2 = 6$$

[W]

3. Picture B has two stories.

1 chick and 2 chicks = _?_ chicks.

2 chicks and 1 chick = _?_ chicks.

Write the pair of number stories for picture B the short way.

4. For picture C write the pair of number stories the long way. Then write them the short way.



5. In picture A, the things are alike in all the groups. They are all drums. How are the groups in picture B alike? in picture C?

Make pictures for these groups:

6. 2 cookies and 1 cooky

7. 2 tents and 3 tents

Under each picture write the two put-together stories the long way. Then write them the short way.

In a put-together story, all the things are alike.

Most put-together stories go in pairs.

Number Stories the Up-and-Down Way

Through addition facts for 6 [W]

1. Write the two number stories for the 6 dots in the dot picture. Write the stories the short way.



You can write the pair of number stories for the dot picture in a new way.

Old Left-to-Right Way

a. $4 + 2 = 6$

b. $2 + 4 = 6$

New Up-and-Down Way

a. $\begin{array}{r} 4 \\ +2 \\ \hline 6 \end{array}$

b. $\begin{array}{r} 2 \\ +4 \\ \hline 6 \end{array}$



You read the new up-and-down way the same as the old way. Start at the top and read the numbers downward.

2. Write the pair of put-together stories for this dot picture in the new up-and-down way.



Write these stories with the answers in the up-and-down way. **HELPER:** Use dot pictures.

3. $1 + 5 = ?$

7. $3 + 2 = ?$

11. $1 + 3 = ?$

4. $2 + 4 = ?$

8. $5 + 1 = ?$

12. $4 + 2 = ?$

5. $4 + 1 = ?$

9. $2 + 3 = ?$

13. $1 + 4 = ?$

6. $2 + 1 = ?$

10. $3 + 3 = ?$

14. $3 + 1 = ?$

[O]

Tell the answers for these. Read downward.

| | a | b | c | d | e | f | g | h | i |
|-----|------|------|------|------|------|------|------|------|------|
| 15. | 3 | 2 | 1 | 4 | 1 | 4 | 2 | 3 | 5 |
| | $+2$ | $+4$ | $+4$ | $+2$ | $+3$ | $+1$ | $+3$ | $+1$ | $+1$ |

(five) 5

Do You Have Pets?

Problem-solving: adding [W]

1. Ann has 2 black cats and 2 white cats. How many cats has she in all?

You want to find how many cats there are in all. To find how many in all, you **put groups together**. This is called **adding**. You add when you *think*,

2 cats and 2 cats are 4 cats.

When you add, you can write the story as in box A.

A

$$\begin{array}{r} 2 \text{ cats} \\ + 2 \text{ cats} \\ \hline 4 \text{ cats} \end{array}$$

2. Jean has 1 bird and Betty has 4 birds. How many birds have they in all?

Box B will help you to add.

B

$$\begin{array}{r} 1 \text{ bird} \\ + 4 \text{ birds} \\ \hline ? \text{ birds} \end{array}$$

Add in these stories about pets.

Use the dot pictures.



3. Two of Ted's squirrels are red and 4 are gray. In all he has how many squirrels?



4. Mary had 3 large goldfish. Her mother bought her 3 small goldfish. Then how many goldfish did she have?



5. Ned's pets are 4 white mice and 2 black mice. That makes how many mice for Ned?



6. Three of Andy's goats are in a pen and 2 are in the barn. How many goats has Andy?



7. Mike had 4 frogs. He found 1 more frog. Then how many frogs did he have?

To find how many in all, you add.

Addition Stories about 7

Addition facts for 7 [W]

1. Use picture A to write two adding stories about 7.

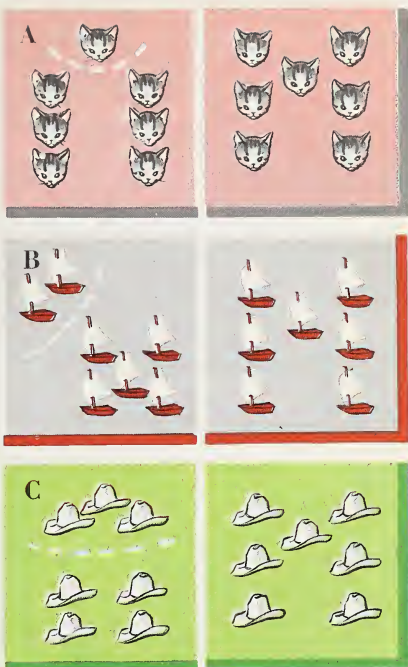
2. Write the two adding stories for picture B. Write them the up-and-down way.

3. Do the same for C.

4. The pairs of adding stories about 7 are

a. $\begin{array}{r} 1 \\ +6 \\ \hline 7 \end{array}$ b. $\begin{array}{r} 2 \\ +5 \\ \hline 7 \end{array}$

c. $\begin{array}{r} 3 \\ +4 \\ \hline 7 \end{array}$



1 + 6 always equal 7. So $1 + 6 = 7$ is a fact. Facts like $1 + 6 = 7$, $2 + 3 = 5$, $2 + 1 = 3$, are called addition facts.

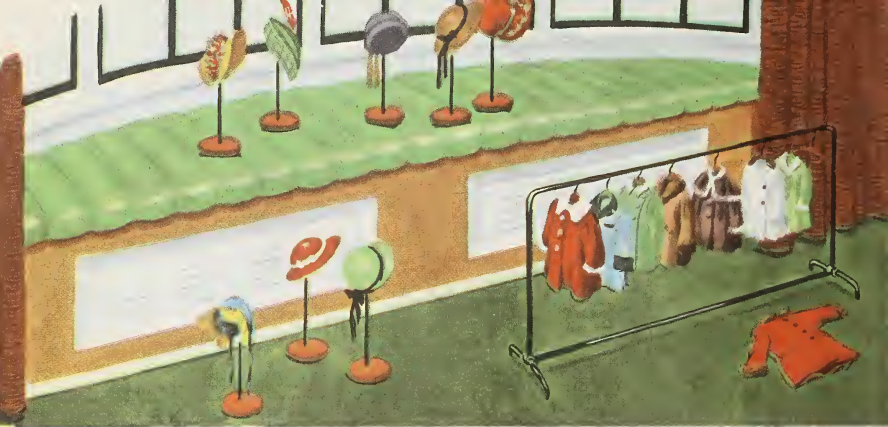
A story with no answer like $3 + 4 = ?$ is called an example.

Write two addition facts for each of examples 5 to 8. For example 5, write " $4 + 2 = 6$ and $2 + 4 = 6$."

5. 4 and 2 6. 1 and 6 7. 5 and 2 8. 3 and 1

Tell the answers for these addition examples:

| | a | b | c | d | e | f | g | h | i |
|----|------|------|------|------|------|------|------|------|------|
| 9. | 3 | 3 | 6 | 2 | 4 | 4 | 5 | 2 | 1 |
| | $+4$ | $+3$ | $+1$ | $+5$ | $+2$ | $+3$ | $+2$ | $+4$ | $+6$ |



A

$$\begin{array}{r} 3 \text{ hats} \\ + 5 \text{ hats} \\ \hline ? \text{ hats} \end{array} \quad \begin{array}{r} 5 \text{ hats} \\ + 3 \text{ hats} \\ \hline ? \text{ hats} \end{array}$$

B

$$\begin{array}{r} 1 \text{ coat} \\ + 7 \text{ coats} \\ \hline ? \text{ coats} \end{array} \quad \begin{array}{r} 7 \text{ coats} \\ + 1 \text{ coat} \\ \hline ? \text{ coats} \end{array}$$

C

$$\begin{array}{r} 2 \text{ dolls} \\ + 6 \text{ dolls} \\ \hline ? \text{ dolls} \end{array} \quad \begin{array}{r} 6 \text{ dolls} \\ + 2 \text{ dolls} \\ \hline ? \text{ dolls} \end{array}$$

D

$$\begin{array}{r} 4 \text{ dresses} \\ + 4 \text{ dresses} \\ \hline ? \text{ dresses} \end{array}$$

Susan Plays with Her Dolls

Addition facts for 8 [W]

1. Copy the two examples in box A and write the answers.

HELPER: Use the hats in the picture.

2. Copy and find answers for the examples in boxes B and C.

3. Copy and finish the work in box D. Why is there only one example here?

One way to learn facts is to read and say them. Try this way to help you learn these addition facts for 8:

$$1 + 7 = 8 \quad 7 + 1 = 8$$

$$2 + 6 = 8 \quad 6 + 2 = 8$$

$$3 + 5 = 8 \quad 5 + 3 = 8$$

$$4 + 4 = 8$$



Make dot pictures for these **stories, or problems.**
Write two addition facts for problems 4 to 6.

4. Susan put red hair ribbons on 5 dolls and blue hair ribbons on 3 dolls. How many of her dolls had ribbons in their hair?



5. Seven dolls went to sleep. Then one more doll went to sleep. How many were sleeping then?

6. Susan put 6 coats in one box and 2 coats in another box. How many coats was that?

[O]

Tell two addition facts for each pair of numbers.

7. 3 and 5

9. 7 and 1

11. 2 and 6

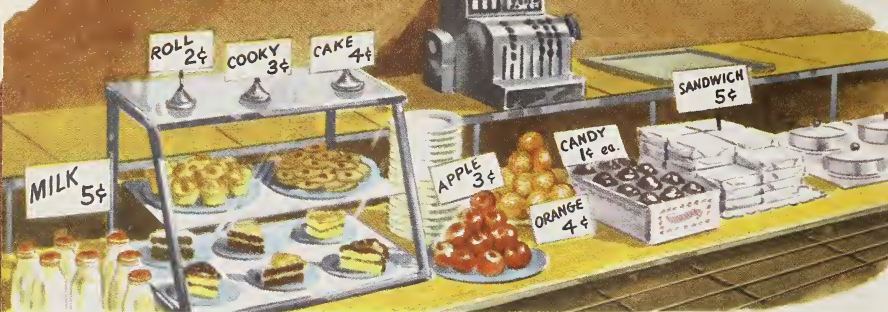
8. 5 and 2

10. 3 and 4

12. 4 and 2

Tell the answers for these examples:

| | a | b | c | d | e | f | g | h | i |
|-----|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 13. | 2 | 3 | 2 | 4 | 6 | 1 | 5 | 3 | 4 |
| | <u>+5</u> | <u>+4</u> | <u>+6</u> | <u>+3</u> | <u>+2</u> | <u>+5</u> | <u>+3</u> | <u>+3</u> | <u>+2</u> |
| 14. | 1 | 3 | 3 | 1 | 4 | 5 | 7 | 2 | 5 |
| | <u>+7</u> | <u>+2</u> | <u>+5</u> | <u>+6</u> | <u>+4</u> | <u>+2</u> | <u>+1</u> | <u>+4</u> | <u>+1</u> |



Buying Lunch at School

Adding money numbers [W]

Milk costs 5 cents, or 5¢. The sign ¢ stands for **cents**.
A roll costs 2¢. What do milk and a roll cost together?

To find how much some milk and a roll cost, you can write the work as in box A.

A

$$\begin{array}{r} 5¢ \\ + 2¢ \\ \hline 7¢ \end{array}$$

For each of problems 1 to 8, find how much the two things cost together. Use the big picture and write your work as in box A.

- | | |
|----------------------------|-------------------------|
| 1. a roll and an apple | 5. candy and a sandwich |
| 2. an apple and a sandwich | 6. an apple and cake |
| 3. an orange and a roll | 7. 2 oranges |
| 4. an orange and an apple | 8. a roll and cake |



9. Box B shows a nickel, or 5¢, and 3¢ more. In all, it shows ¢.

How much in all are

10. 1 nickel and 1 cent?
11. 2 cents and a nickel?

To find how much in all, you add.

Naming Addition Answers

[O]

Answers for addition examples are called **sums**. In $2 + 2 = 4$, what is the sum?

In rows 1 to 3, cover the sums with paper. Then say the sums. Start at the left. Learn the facts that you cannot give quickly.

| | a | b | c | d | e | f | g | h | i |
|----|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1. | 5 | 7 | 3 | 4 | 1 | 4 | 3 | 1 | 4 |
| | $\frac{+2}{7}$ | $\frac{+1}{8}$ | $\frac{+4}{7}$ | $\frac{+2}{6}$ | $\frac{+5}{6}$ | $\frac{+4}{8}$ | $\frac{+2}{5}$ | $\frac{+3}{4}$ | $\frac{+1}{5}$ |
| 2. | 1 | 3 | 6 | 3 | 1 | 3 | 2 | 2 | 2 |
| | $\frac{+7}{8}$ | $\frac{+3}{6}$ | $\frac{+1}{7}$ | $\frac{+5}{8}$ | $\frac{+6}{7}$ | $\frac{+1}{4}$ | $\frac{+5}{7}$ | $\frac{+2}{4}$ | $\frac{+1}{3}$ |
| 3. | 2 | 5 | 2 | 2 | 4 | 6 | 1 | 5 | 1 |
| | $\frac{+4}{6}$ | $\frac{+3}{8}$ | $\frac{+6}{8}$ | $\frac{+3}{5}$ | $\frac{+3}{7}$ | $\frac{+2}{8}$ | $\frac{+4}{5}$ | $\frac{+1}{6}$ | $\frac{+2}{3}$ |

Look at each sum in row 1. Is the sum larger than each number you add? Now look at each sum in rows 2 and 3. Is the sum larger than each number you add?

In most addition examples, the sum is larger than any of the numbers added.

Which of these sums cannot be right? Tell why.

- | | | |
|----------------|----------------|-----------------|
| 4. $3 + 4 = 3$ | 7. $4 + 3 = 7$ | 10. $5 + 3 = 8$ |
| 5. $1 + 7 = 6$ | 8. $4 + 4 = 8$ | 11. $6 + 2 = 5$ |
| 6. $3 + 5 = 4$ | 9. $2 + 6 = 5$ | 12. $5 + 2 = 7$ |

Knowing When to Add

Problem-solving: addition [W]

To find how many or how much in all, you add.
To add, you put together groups of things which are alike.

Then the things in the sum are alike.

Most sums are larger than any number added.

$$\begin{array}{r} 5 \text{ children} \\ + 2 \text{ children} \\ \hline 7 \text{ children} \end{array}$$

1. Five children were playing a game. Then 2 more children came to play. How many children were then playing?

Copy the number story, as in the box. The name is written after each number to show that 5 and 2 and 7 are groups of children. Are the things alike in the groups added and in the sum?

Write the work for problems 2 to 5 as you did for problem 1. Make dot pictures if you need to.

2. Patty read 2 stories in one book and 5 stories in another. How many stories did she read?

3. In one story there were 3 large monkeys and 5 small ones. How many monkeys were there?

4. Ann had 3¢. Her father gave her 4¢ more. Then Ann had how much?

5. Jean played 4 games with her ball, then 3 more games. That was how many games in all?

Sometimes your teacher may ask you to add numbers without writing their names.

Do You Know?

Progress Test 1 [W]

On your paper write the numbers 1 to 6. After the number 1 put the answer for question 1. After the number 2 put the answer for question 2, and so on.

1. To find how many in all, what must you do?
2. What are answers in addition called?
3. How many cents are equal to a nickel?
4. When you add, what do you do with groups?
5. What fact makes a pair with $3 + 4 = 7$?
6. Write $2 + 4 = 6$ in the up-and-down way.

Save Time with Folded Paper

You need not always copy examples when you must find answers. You can write the answers on folded paper.

You use folded paper this way:

First, lay the top of the paper under the examples in row 1. Write the number of the row and then the answers.

Then, as in the picture, fold this row of answers under. Write "2." for the number of the row. Then add and write the answers to the second row, and so on.

In rows 1 to 3 on page 11 cover the answers. Write the sums on folded paper.

| | | | | |
|----|-----------|-----------|-----------|-----------|
| 1. | 2 | 1 | 2 | 1 |
| | <u>+1</u> | <u>+1</u> | <u>+2</u> | <u>+3</u> |
| 2. | 3 | 4 | 3 | 4 |
| | <u>+2</u> | <u>+1</u> | <u>+2</u> | <u>+4</u> |
| 2. | 5 | 5 | 5 | 8 |
| 3. | | | | |

[W]

Larger Numbers

Understanding 2-place numbers [O]

A

| | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |
| 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 |
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |
| 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 |
| 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | |

1. Zero (0), by itself, is not in box A. Zero is not like the numbers 1 to 9. It means “not any.” The numbers stand for one or more. On the board, write the numbers 1 to 9.

2. The numbers **1 to 9 are 1-place numbers.** Why?

3. Say the 1-place numbers in box A.

4. The numbers **10 to 99 are 2-place numbers.** Why?

5. Read the 2-place numbers under 10 in box A. The names of these numbers are in box B.

B

| | | |
|------------------|-----------------|-------------------|
| 10 ten | 40 forty | 70 seventy |
| 20 twenty | 50 fifty | 80 eighty |
| 30 thirty | 60 sixty | 90 ninety |

6. Tell how each number in box B begins. 10 (ten) begins with 1, 20 (twenty) with **20**-, and so on.

7. In box B, all numbers end in what?

8. Read the numbers down the column under 4. Say, “fourteen, twenty-four, thirty-four,” and so on.

9. All these numbers end in _?_. How do these numbers begin?

10. Read the numbers down the column under 3.

11. All these numbers end in _?_. How do these numbers begin?

12. Read the row of numbers beginning with 21.

13. The numbers 21 through 29 all begin with _?_. How do these numbers end?

14. Read the row of numbers beginning with 61.

15. The numbers 61 through 69 all begin with _?_. How do these numbers end?

[W]

16. Write the numbers from 36 to 41.

17. Count by 10's to sixty. Write the numbers.

18. Copy the largest of the three numbers.

a. 47, 52, 69 b. 40, 37, 29 c. 38, 46, 51

19. Copy the smallest of the three numbers.

a. 36, 33, 35 b. 53, 60, 49 c. 62, 75, 94

20. Write these 2-place numbers in figures:

| | | |
|--------------|----------------|----------------|
| a. forty-two | d. thirty-five | g. twenty |
| b. sixty-one | e. sixty | h. forty-six |
| c. eighty | f. fifty-eight | i. thirty-four |

21. In 52, is 5 or is 2 the figure on the left?

Faster Ways to Count

Two-place numbers [O]

1. Count the jack-o'-lanterns at the left by 1's. Count the jack-o'-lanterns by 2's.

2. Count the pears at the right by 5's. Count the cherries at the bottom by 10's. Could you count them by 1's?

3. In **counting by 1's, 2's, 5's, and 10's**, did you get 30? Why do we count by groups larger than 1?

[W]

For each example, write the missing numbers. Look at page 14 if you need to.

4. Count by 2's: 54, 56, ?, ?, ?, 64, ?

5. Count by 3's: 3, ?, 9, ?, 15, ?, ?

6. Count by 4's: 12, ?, 20, ?, ?, 32, ?

7. Count by 5's: 5, 10, ?, ?, ?, ?, 35, ?

8. Count by 10's: 40, 50, ?, ?, ?, ?

9. Write the number just after

a. 39; b. 60; c. 78; d. 89.

10. Write the number just before

a. 50; b. 84; c. 49; d. 63.

11. Write the three numbers from smallest to largest. For a, write "26, 29, 31."

a. 31, 26, 29

c. 73, 78, 71

b. 66, 65, 64

d. 55, 52, 58



Are Numbers Needed?

[10]

1. A boy's kite was very high in the air. How high was it?

2. A girl says she lives a long way down the street. How far is that?

3. A boy said he saw a great many animals at the park. How many did he see?

4. A man said his house cost a lot of money. Can you tell how much a lot of money is?

5. A woman had only a little time to rest. How much time did she have?

6. If there were no numbers, how could you tell someone

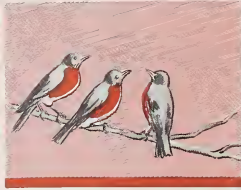
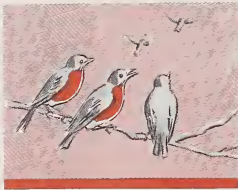
- a. how many cakes to take to a picnic?
- b. how long it takes to get to a place?
- c. how many children were at a ball game?
- d. how many runs each side made?
- e. at what time a train leaves?
- f. how old you are?
- g. how tall your father is?
- h. how many marbles are in the box?
- i. how heavy you are?
- j. how long this line is? _____



With numbers you can think and tell how many.
Tell ways in which you use numbers.

We Use Moving Pictures

Meaning of subtraction; number-left idea [O]

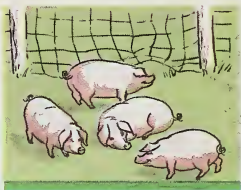
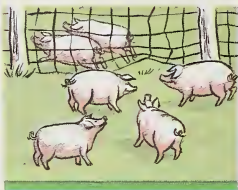
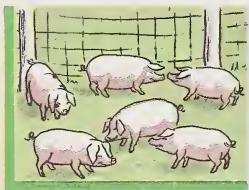


1. Five robins were in a tree. Two flew away. How many robins stayed in the tree?

2. The moving picture shows this story:

5 robins take away 2 robins is $-?$ robins.

3. The things in the groups are alike. They are all $-?$.

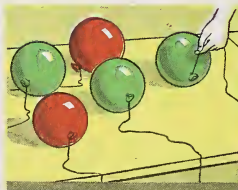


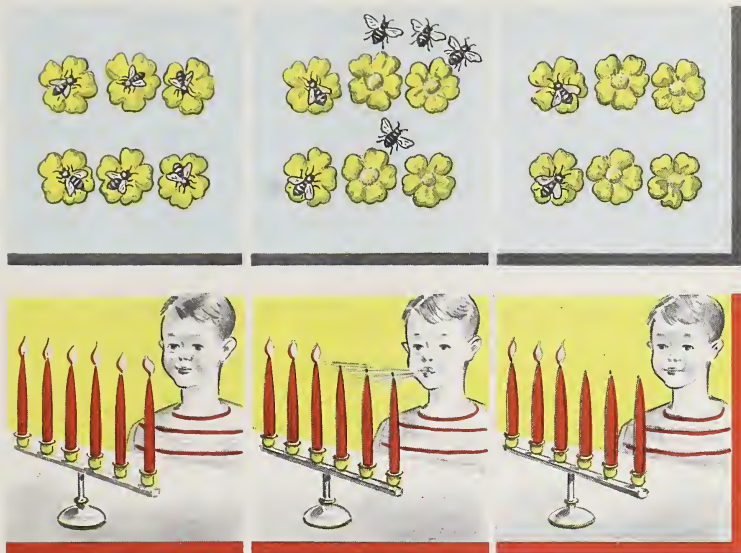
4. Six pigs were in a pen. Two pigs got through the fence. How many pigs were left?

5. Answer this take-away question about the pigs:

6 pigs take away 2 pigs is $-?$ pigs.

6. Tell the take-away story for the moving picture about the balloons.





[W]

Write on your paper the take-away story for
 7. the bees in the picture. 8. the candles in the picture.

For each of examples 9 to 15, make a moving picture
and write its take-away story.

9. 5 tents were in a field. 3 fell down.
10. 4 balls were in a row. 3 rolled away.
11. 5 chairs were in a row. Tom took 2 away.
12. 5 flowers were in a bowl. 4 fell out.
13. 3 pencils were on a table. 2 rolled off.
14. 4 cats were on a fence. 2 jumped down.
15. 6 eggs were on a table. 5 rolled off.

In a take-away story, the things are alike.

Short Ways for Take-Away Stories

Reading and writing subtraction facts [O]



Tom had 6 pieces of candy. He ate 2 pieces. How many pieces were left?

Use the picture to help you finish the take-away story.

6 pieces take away 2 pieces is $6 - 2 =$? pieces.

Here are **short ways** to write this take-away story. We write the larger number first.

Left-to-Right Way

$$6 - 2 = 4$$

Up-and-Down Way

$$\begin{array}{r} 6 \\ -2 \\ \hline 4 \end{array}$$

To read these take-away stories, or facts, we say “6 take away 2 is 4” or “2 from 6 equals 4.”

What does this sign $-$ tell you to do?

[W]

Write take-away facts for examples 1 to 12 in both short ways. Make dot pictures and cross out dots if you need to. This picture for example 1 has 1 dot crossed out.



- | | |
|----------------------|-----------------------|
| 1. 6 take away 1 = ? | 7. 4 take away 2 = ? |
| 2. 3 from 4 = ? | 8. 5 take away 1 = ? |
| 3. 5 take away 3 = ? | 9. 6 take away 3 = ? |
| 4. 5 take away 4 = ? | 10. 6 take away 5 = ? |
| 5. 4 from 6 = ? | 11. 1 from 4 = ? |
| 6. 5 take away 2 = ? | 12. 6 take away 2 = ? |

Most Take-Away Facts Go in Pairs

Subtraction facts for 7 [O]

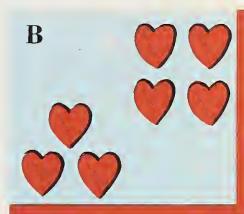
1. Ann had 7 crayons (picture A). She lost 2 crayons. Cover 2 crayons and find how many are left.

7 take away 2 is _?_ $7 - 2 = ?$



2. Cover 5 of the crayons. Find how many are left.

7 take away 5 is _?_ $7 - 5 = ?$



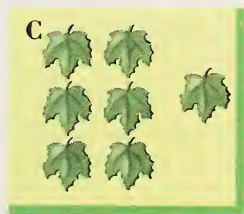
3. Use picture B to find a pair of take-away facts.

Cover 3 hearts. $7 - 3 = ?$

Cover 4 hearts. $7 - 4 = ?$

4. Cover leaves in picture C. Find a pair of take-away facts.

$7 - 6 = ?$ $7 - 1 = ?$



Most take-away facts go in pairs.

[W]

Copy and finish examples 5 to 19. Beside each, write the other take-away story that goes with it.

Make dot pictures and cover groups of dots if you need help.

5. $7 - 4 = ?$ 10. $6 - 1 = ?$ 15. $4 - 1 = ?$

6. $5 - 2 = ?$ 11. $5 - 4 = ?$ 16. $4 - 3 = ?$

7. $7 - 5 = ?$ 12. $5 - 3 = ?$ 17. $7 - 2 = ?$

8. $6 - 4 = ?$ 13. $7 - 1 = ?$ 18. $6 - 5 = ?$

9. $7 - 3 = ?$ 14. $6 - 2 = ?$ 19. $7 - 6 = ?$



Problems to Find How Many Left

Problem-solving: subtracting [O]

1. Mother had 7 candles to put on the cake. She put 5 candles on the cake. How many candles are left?

To find how many are left, you take away, or subtract, one group from another group.

$$\begin{array}{r} 7 \text{ candles} \\ - 5 \text{ candles} \\ \hline 2 \text{ candles} \end{array}$$

For example 1, subtract 5 candles from 7 candles. The subtracting is done for you in the box. Are the things in all the groups alike?

2. Andy made 6 snowmen. Then he pushed 4 of them over. How many snowmen were left standing?

The problem question is "How many snowmen were left standing?" What can you do to find how many left?

Why do we call $6 - 4 = ?$ the number question?

**To find how many are left, you subtract.
When you subtract, you take away one group
from another group.**

For problems 3 to 8, write the work as in the box for example 1. Each time put the number for the larger group at the top. Use dot pictures if you need to.

3. Mary had 6 doll shoes, but she has lost 3 of them. How many doll shoes has she now?

4. Tom gave away 4 of his 7 puppies. How many of his puppies did he keep?

5. Two of Mike's 6 toy horses are broken. How many toy horses are not broken?

6. Tom ate 2 of his 7 candy turkeys, so then he had how many left?

7. Jean bought a toy pony for 3¢. She had 7¢ to start with. She had how much money left? (Copy and finish the work in the box.)

$$\begin{array}{r} 7 \text{ ¢} \\ - \text{ } ? \text{ ¢} \\ \hline \text{ } ? \text{ ¢} \end{array}$$

8. Rusty gave 2¢ of his 5¢ for candy. How much of his money did he keep?

Writing Pairs of Subtraction Facts

In the box are two subtraction facts. One fact is in example 1. The other goes with it to make a pair. Write a pair of subtraction facts for each of the examples 2 to 12.

$$\begin{array}{l} 6 - 5 = 1 \\ 6 - 1 = 5 \end{array}$$

- | | | |
|----------------|----------------|-----------------|
| 1. $6 - 5 = ?$ | 5. $6 - 2 = ?$ | 9. $3 - 2 = ?$ |
| 2. $5 - 2 = ?$ | 6. $7 - 3 = ?$ | 10. $7 - 2 = ?$ |
| 3. $7 - 4 = ?$ | 7. $4 - 3 = ?$ | 11. $5 - 4 = ?$ |
| 4. $5 - 3 = ?$ | 8. $7 - 1 = ?$ | 12. $6 - 4 = ?$ |

Naming Subtraction Answers

Remainder idea [O]

In rows 1 to 3 are some subtraction facts.

Sometimes the answers in subtraction are called **remainders**. The remainder for $7 - 5$ is 2.

Cover the remainders in rows 1, 2, and 3 and say all the remainders you can.

| | a | b | c | d | e | f | g |
|----|--|--|--|--|--|--|--|
| 1. | $\begin{array}{r} 6 \\ -2 \\ \hline 4 \end{array}$ | $\begin{array}{r} 4 \\ -3 \\ \hline 1 \end{array}$ | $\begin{array}{r} 7 \\ -3 \\ \hline 4 \end{array}$ | $\begin{array}{r} 5 \\ -4 \\ \hline 1 \end{array}$ | $\begin{array}{r} 7 \\ -1 \\ \hline 6 \end{array}$ | $\begin{array}{r} 6 \\ -4 \\ \hline 2 \end{array}$ | $\begin{array}{r} 4 \\ -1 \\ \hline 3 \end{array}$ |
| 2. | $\begin{array}{r} 5 \\ -1 \\ \hline 4 \end{array}$ | $\begin{array}{r} 7 \\ -5 \\ \hline 2 \end{array}$ | $\begin{array}{r} 5 \\ -2 \\ \hline 3 \end{array}$ | $\begin{array}{r} 6 \\ -3 \\ \hline 3 \end{array}$ | $\begin{array}{r} 7 \\ -6 \\ \hline 1 \end{array}$ | $\begin{array}{r} 6 \\ -5 \\ \hline 1 \end{array}$ | $\begin{array}{r} 2 \\ -1 \\ \hline 1 \end{array}$ |
| 3. | $\begin{array}{r} 7 \\ -2 \\ \hline 5 \end{array}$ | $\begin{array}{r} 3 \\ -2 \\ \hline 1 \end{array}$ | $\begin{array}{r} 6 \\ -1 \\ \hline 5 \end{array}$ | $\begin{array}{r} 7 \\ -4 \\ \hline 3 \end{array}$ | $\begin{array}{r} 5 \\ -3 \\ \hline 2 \end{array}$ | $\begin{array}{r} 4 \\ -2 \\ \hline 2 \end{array}$ | $\begin{array}{r} 3 \\ -1 \\ \hline 2 \end{array}$ |

Tell ways to help you learn facts you do not know.

In row 1, look at the top number and the remainder for each fact. Is the remainder larger or is it smaller than the number you subtract from?

Look at the top number and the remainder in rows 2 and 3. Is the remainder larger or smaller than the number you subtract from?

In most examples, the remainder is smaller than the number you subtract from.



Using Subtraction

Problem-solving: subtraction [W]

To find how many are left, you subtract.

When you subtract, you take away one group from another group.

The things in these groups are alike.

In most examples, the remainder is smaller than the number you subtract from.

Write the work for problems 1 to 5.

1. We had 7 bottles of milk. The children took 5.
How many bottles of milk were left?

2. There were 7 straws. Susan gave 4 to the children.
How many straws were left?

3. Six boys were at the table. Four of them went
away. How many stayed at the table?

4. Mary cannot find 3 of her 5 pencils. How many
pencils does she have to write with?

5. We had 7 books about animals. Mike took 3 of
the books home. How many animal books were left?

Numbers in Dominoes

Relating addition and subtraction [O]



1. Domino A is a picture of two addition facts about 7. Write them on the board.

$$1 + 6 = ?$$

$$6 + 1 = ?$$

2. It shows two subtraction facts about 7, too.

Cover the dot at the top. $7 - 1 = ?$

Cover the 6 bottom dots. $7 - 6 = ?$



So, domino A shows in all four facts about 7, two in addition and two in subtraction. The four facts together make **the whole story** about 1, 6, and 7.



ADDITION

$$1 + 6 = 7$$

$$6 + 1 = 7$$

SUBTRACTION

$$7 - 1 = 6$$

$$7 - 6 = 1$$



3. Write the two addition facts on domino B. Write the two subtraction facts. Have you made the whole story about 2, 5, and 7?

4. Write the whole story on domino C.

5. Domino D is a **double**. $3 + 3 = ?$ $6 - 3 = ?$

6. For domino D, how many addition facts are there? How many subtraction facts?

A double has only two facts, one in addition and one in subtraction.

Every addition fact, not a double, goes with one other addition fact and two subtraction facts. This makes four facts in all.

These two or four facts are the whole story.

Writing Whole Stories

Whole stories for 8 [W]

1 to 4. For picture A, write the whole story. A Write the whole story for B; for C; for D.

5 and 6. How many parts are in each whole story for pictures A, B, and C? for picture D?

Copy these whole stories for 8. Try to learn them as you write them.



1, 7, and 8

$$1 + 7 = 8$$

$$7 + 1 = 8$$

$$8 - 7 = 1$$

$$8 - 1 = 7$$

2, 6, and 8

$$2 + 6 = 8$$

$$6 + 2 = 8$$

$$8 - 6 = 2$$

$$8 - 2 = 6$$

3, 5, and 8

$$3 + 5 = 8$$

$$5 + 3 = 8$$

$$8 - 5 = 3$$

$$8 - 3 = 5$$

4, 4, and 8

$$4 + 4 = 8$$

$$8 - 4 = 4$$

A New Kind of Example

[W]

In these examples, **n** stands for a number you must find. In example 1, you know $5 + 3 = 8$, so **n** stands for 8. In example 2, $7 - 6 = 1$, so **n** stands for 1.

Copy and write the number where you see **n**

1. $5 + 3 = \mathbf{n}$

6. $2 + 3 = \mathbf{n}$

11. $8 - 5 = \mathbf{n}$

2. $7 - 6 = \mathbf{n}$

7. $8 - 4 = \mathbf{n}$

12. $4 + 2 = \mathbf{n}$

3. $8 - 6 = \mathbf{n}$

8. $6 - 5 = \mathbf{n}$

13. $8 - 3 = \mathbf{n}$

4. $7 - 5 = \mathbf{n}$

9. $6 + 2 = \mathbf{n}$

14. $2 + 5 = \mathbf{n}$








5. $6 + 1 = \mathbf{n}$

10. $4 + 3 = \mathbf{n}$

15. $7 - 4 = \mathbf{n}$

Parts of 9

Addition and subtraction facts for 9 [O]

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---------|
| A |  |  |  |  |  |  |  |  |  |  | 1 and 8 |
| B |  |  |  |  |  |  | | | | | 2 and 7 |
| C |  |  |  | | | | | | | | 3 and 6 |
| D |  |  |  | | | | | | | | 4 and 5 |
| E |  |  |  | | | | | | | | 5 and 4 |
| F |  |  |  | | | | | | | | 6 and 3 |
| G |  |  |  | | | | | | | | 7 and 2 |
| H |  |  |  | | | | | | | | 8 and 1 |

1. In each row, the two groups together make 9 .

2. Row A shows that 1 and 8 are parts of 9. The same two parts of 9 are shown in different order in the last row, 8 and 1, not 1 and 8.

3. Row B shows that 2 and 7 are parts of 9.

4. Row 9 shows the same two parts of 9 as row B.

5. The same parts of 9 are shown by row C and by row 9 in different order.

6. The same parts of 9 are shown by row D and by row 9 in different order.

7. Use what you know about the parts of 9 to tell the whole story for

a. row B; b. row H; c. row F; d. row E.

8. What is the other part of 9 if

a. 3 is one part?

c. 5 is one part?

b. 1 is one part?

d. 2 is one part?

Whole Stories Are Helpers

[W]

Copy these whole stories for 9. Try to learn them as you write them.

| 1, 8, and 9 | 2, 7, and 9 | 3, 6, and 9 | 4, 5, and 9 |
|-------------|-------------|-------------|-------------|
| $1 + 8 = 9$ | $2 + 7 = 9$ | $3 + 6 = 9$ | $4 + 5 = 9$ |
| $8 + 1 = 9$ | $7 + 2 = 9$ | $6 + 3 = 9$ | $5 + 4 = 9$ |
| $9 - 1 = 8$ | $9 - 2 = 7$ | $9 - 3 = 6$ | $9 - 4 = 5$ |
| $9 - 8 = 1$ | $9 - 7 = 2$ | $9 - 6 = 3$ | $9 - 5 = 4$ |

When you do not know a fact, using a whole story will help you. You can find the remainder for $7 - 2$ by using $2 + 5 = 7$ or $5 + 2 = 7$ or $7 - 5 = 2$.

[O]

Say the answers for rows 1 to 4. Watch the signs! For facts that are hard, use whole stories.

| | a | b | c | d | e | f | g | h | i |
|----|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 1. | 6 | 9 | 9 | 5 | 8 | 7 | 6 | 9 | 7 |
| | <u>+2</u> | <u>-3</u> | <u>-2</u> | <u>+2</u> | <u>+1</u> | <u>-6</u> | <u>+3</u> | <u>-5</u> | <u>-2</u> |
| 2. | 7 | 8 | 3 | 8 | 9 | 4 | 8 | 4 | 4 |
| | <u>+2</u> | <u>-2</u> | <u>+4</u> | <u>-3</u> | <u>-7</u> | <u>+5</u> | <u>-6</u> | <u>+3</u> | <u>+4</u> |
| 3. | 9 | 1 | 7 | 5 | 7 | 5 | 8 | 3 | 2 |
| | <u>-4</u> | <u>+8</u> | <u>-3</u> | <u>+4</u> | <u>-5</u> | <u>+3</u> | <u>-4</u> | <u>+6</u> | <u>+5</u> |
| 4. | 9 | 2 | 3 | 9 | 8 | 7 | 9 | 2 | 6 |
| | <u>-8</u> | <u>+7</u> | <u>+5</u> | <u>-6</u> | <u>-5</u> | <u>-4</u> | <u>-1</u> | <u>+6</u> | <u>-2</u> |

How many facts has the whole story about 4, 4, and 8? about 3, 3, and 6? about 2, 2, and 4?

Tell the whole story about each of these doubles.



Do You Add or Subtract?

Problem-solving: differentiating addition and subtraction [W]

Add to find how many in all.

Subtract to find how many left.

On your paper, write the numbers 1 to 5. After each, write **A.** if you are to **add** in the problem, or **S.** if you are to **subtract**. Do not work the problems.

1. Is the moving picture at the top of the page an addition or a subtraction picture?

2. On Monday, 4 small boys and 5 big boys played ball. How many boys played ball on Monday?

3. Ann said, "Watch! I am holding up 7 fingers. Now I bend down 3 fingers. Quick! Tell me how many fingers I did not bend?"

4. Six girls were in a ring and 3 girls joined them. Then the ring had how many girls?

5. Mike had 7 marbles. He lost 4 of them. How many marbles did he have then?

[O]

Tell why you wrote A. or S. for each problem.

Do You Know?

Progress Test 2 [W]

Turn to page 24. Cover the answers of row 1 with folded paper and write the remainders.

Do the same for row 2; for row 3.

If you missed any facts, learn them.

Write the example numbers 1 to 13 on your paper. Then write the answers.

1. Find n in $7 - 2 = n$.
2. To find how many in all, what must you do?
3. In most examples, is the remainder larger or smaller than the number you subtract from?
4. Write "thirty-seven" in figures.
5. To find how many are left, what must you do?
6. Write the whole story in addition and subtraction for 2, 7, and 9.
7. What subtraction fact goes with $7 - 3 = 4$?
8. What sign tells you to subtract?
9. Write the word that ϕ stands for.
10. When you subtract, do you take one group from another, or do you put groups together?
11. What addition fact goes with $3 + 2 = 5$?
12. In counting by 4's, what number comes just after 24? after 52?
13. In most examples, is the sum larger or smaller than any number you add?



How Long Is an Inch?

[O]

Jack wants to know how wide his book is. He is measuring it with his ruler to find out.

1. Tell how Jack placed his ruler on the book.
2. Why did he lay the ruler this way?
3. What do the numbers on the ruler mean?
4. How many inches wide is Jack's book?
5. Look at your own ruler. Does it have numbers on it as Jack's ruler does?
6. How many inches long is your ruler?



7. Bend your finger as in the picture, and lay your ruler on it. Now measure this part of your finger. Is it an inch long?

8. Bend and measure the parts of other fingers. Can you find a finger part that is just about an inch long? Call it your **finger inch**.

9. Look at line A. Guess how many inches long it is. Write your guess on a piece of paper.

A _____

10. Measure line A with your finger inch. How long is it? Write the number of inches.

11. Measure line A with your ruler. How long is it? Write the number of inches.

12. Look at line B. Guess how many inches long it is. Write your guess on a piece of paper.

B _____

13. Measure line B with your finger inch, then with your ruler. Write the number of inches.

14. Could you tell how long line A is without using your ruler? how long line B is?

15. Did it help to use your finger inch?

16. Why is the ruler the best way to measure?

17. Without using your ruler, draw a line that you think is

a. 2 inches long; b. 4 inches long;

c. just 1 inch long.

18. Measure the lines with your ruler. Did you draw the lines about right?

19. Measure this page from top to bottom with your ruler. About how long is it?

20. Measure your desk from top to bottom with your ruler. How high is your desk?

Using Your Ruler

Addition and subtraction facts for 10 [W]

You can use your ruler to add and to subtract.

To find the **sum** of $1 + 2$, first find 1 (a on the ruler at the left). Then **count** 2 more **to the right** (to b). Does this show that $1 + 2 = 3$?

To find the **remainder** for $4 - 2$, first find 4 (c on the ruler). Then **count** back 2 **to the left** (to d). Does this tell you that $4 - 2 = 2$?

Copy and write answers for these examples.
Use your ruler to find sums and remainders.

| | | | |
|---|---|---|---|
| 1. $\begin{array}{r} 3 \\ +5 \\ \hline \end{array}$ | 2. $\begin{array}{r} 6 \\ +2 \\ \hline \end{array}$ | 3. $\begin{array}{r} 4 \\ +5 \\ \hline \end{array}$ | 4. $\begin{array}{r} 5 \\ +5 \\ \hline \end{array}$ |
|---|---|---|---|

| | | | |
|---|---|---|---|
| 5. $\begin{array}{r} 1 \\ +9 \\ \hline \end{array}$ | 6. $\begin{array}{r} 3 \\ +7 \\ \hline \end{array}$ | 7. $\begin{array}{r} 8 \\ +2 \\ \hline \end{array}$ | 8. $\begin{array}{r} 9 \\ +1 \\ \hline \end{array}$ |
|---|---|---|---|

| | | | |
|---|--|--|--|
| 9. $\begin{array}{r} 6 \\ +4 \\ \hline \end{array}$ | 10. $\begin{array}{r} 2 \\ +8 \\ \hline \end{array}$ | 11. $\begin{array}{r} 4 \\ +6 \\ \hline \end{array}$ | 12. $\begin{array}{r} 7 \\ +3 \\ \hline \end{array}$ |
|---|--|--|--|

| | | | |
|---|---|---|---|
| 13. $\begin{array}{r} 10 \\ -8 \\ \hline \end{array}$ | 14. $\begin{array}{r} 10 \\ -4 \\ \hline \end{array}$ | 15. $\begin{array}{r} 10 \\ -7 \\ \hline \end{array}$ | 16. $\begin{array}{r} 10 \\ -9 \\ \hline \end{array}$ |
|---|---|---|---|

| | | | |
|---|---|---|---|
| 17. $\begin{array}{r} 10 \\ -2 \\ \hline \end{array}$ | 18. $\begin{array}{r} 10 \\ -3 \\ \hline \end{array}$ | 19. $\begin{array}{r} 10 \\ -6 \\ \hline \end{array}$ | 20. $\begin{array}{r} 10 \\ -5 \\ \hline \end{array}$ |
|---|---|---|---|

When you add on your ruler, count to the right.

When you subtract, count to the left.

Finding Parts of 10

[W]

Use your ruler to find the parts of 10.

1. Copy the work in the box.
2. The last row is 9 and 1. Is 9 and 1 like 1 and 9 but in different order?
3. Write the whole story about 1, 9, and 10.
4. Do the same for 2, 8, and 10; for 3, 7, and 10; for 4, 6, and 10.
5. How many facts are in the whole story about 5, 5, and 10?

Parts of 10

1 and 9

2 and 8

3 and 7

4 and 6

5 and 5

6 and 4

7 and 3

8 and 2

9 and 1

The whole stories will help you learn the facts for 10.

Copy these examples and write the number for **n**.

- | | | |
|------------------|-----------------|------------------|
| 6. $3 + 5 = n$ | 11. $6 + 3 = n$ | 16. $8 + 2 = n$ |
| 7. $10 - 4 = n$ | 12. $8 - 3 = n$ | 17. $8 - 6 = n$ |
| 8. $9 - 5 = n$ | 13. $7 + 3 = n$ | 18. $7 - 3 = n$ |
| 9. $6 + 2 = n$ | 14. $7 + 2 = n$ | 19. $2 + 8 = n$ |
| 10. $10 - 3 = n$ | 15. $4 + 6 = n$ | 20. $10 - 2 = n$ |

Study cards

Turn to page 29. Write answers for the examples in rows 1 to 4 on folded paper.

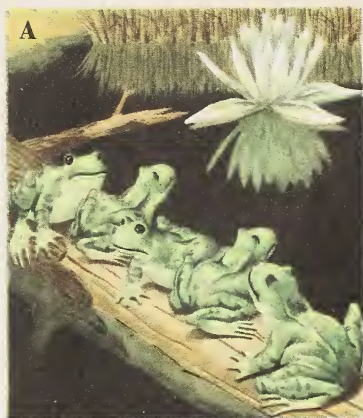
At the right are the front and the back of a **study card**. Make study cards for facts you do not know. Study the facts until you know them.

$$\begin{array}{r} 3 \\ +2 \\ \hline ? \end{array}$$

Front

$$\begin{array}{r} 3 \\ +2 \\ \hline 5 \end{array}$$

Back



A New Use for Subtraction

The number-gone idea in subtraction [O]

1. Five frogs sat on a log. Now only 3 frogs are on the log. How many frogs jumped off?

There were 5 frogs at first (picture A), and 3 frogs are left (picture B). To find how many are gone, you subtract 3 from 5.

C

$$\begin{array}{r} 5 \text{ frogs} \\ -3 \text{ frogs} \\ \hline 2 \text{ frogs} \end{array}$$

Tell the number story for box C.

2. Tom had 8¢. Now he has only 3¢. How many cents did he spend?

To find out, you subtract. Why?

D

$$\begin{array}{r} 8¢ \\ -3¢ \\ \hline ?¢ \end{array}$$

For box D tell the answer to the number question. Did Tom spend 5¢?

3. After making a fire, Tom had 2 of his 8 sticks left. How many did he use?

To find how many are gone, you subtract.

Write your number stories as in box C. Remember to write the larger number at the top.

4. Jean can find only 2 of her 9 turtles. How many of her turtles are lost?

5. Ann had 7 flowers. After giving Nan some she had 3. Ann gave Nan how many flowers?

6. Nine birds were on a tree. Soon only 4 were there. How many birds flew away?

7. There were 7 dogs in the field. Only 2 are left. How many dogs must have gone?

8. Ten children were playing by the water. After some went home, 8 were left. How many children went home?

9. Only 6 of the 9 boats are still there. How many of the boats are not there?

10. Bob gave Sam all but 3 of his 10 tadpoles. Bob gave Sam how many tadpoles?

11. Sue counted 10 candles on her cake. When she tried to blow them all out, there were 6 still burning. How many candles did Sue blow out?

12. The first of November, Joe bought a book of 10 bus tickets. At the end of November he had 4 tickets. How many had he used?

13. Jack bought 8 candies. After eating some he had 2 left. How many candies did Jack eat?

Tell why each of these is a number-gone problem.

n Is Here! **n** Is There!

[O]

1. In box A, tell why the letter **n** stands for

A

a. $5 + 3 = \mathbf{n}$

b. $\mathbf{n} + 3 = 8$

c. $5 + \mathbf{n} = 8$

8 in example a;

5 in example b;

3 in example c.

2. In box B, tell what the letter **n** stands for

B

d. $8 - 3 = \mathbf{n}$

e. $\mathbf{n} - 3 = 5$

f. $8 - \mathbf{n} = 5$

in example d;

in example e;

in example f.

[W]

Copy and write the number that **n** stands for.

a

3. $6 + 3 = \mathbf{n}$

4. $2 + \mathbf{n} = 8$

5. $3 + 4 = \mathbf{n}$

6. $6 + \mathbf{n} = 10$

7. $\mathbf{n} + 4 = 9$

8. $10 - 3 = \mathbf{n}$

9. $9 - \mathbf{n} = 6$

10. $10 - 2 = \mathbf{n}$

11. $\mathbf{n} + 5 = 10$

12. $2 + 7 = \mathbf{n}$

13. $9 - \mathbf{n} = 5$

14. $9 + \mathbf{n} = 10$

b

$8 + 2 = \mathbf{n}$

$7 + \mathbf{n} = 10$

$7 - 4 = \mathbf{n}$

$6 + 2 = \mathbf{n}$

$\mathbf{n} - 5 = 4$

$9 - 7 = \mathbf{n}$

$8 - \mathbf{n} = 2$

$4 + 6 = \mathbf{n}$

$8 - \mathbf{n} = 4$

$3 + 6 = \mathbf{n}$

$\mathbf{n} - 4 = 6$

$7 - 5 = \mathbf{n}$

c

$10 - \mathbf{n} = 4$

$4 + 5 = \mathbf{n}$

$7 + 2 = \mathbf{n}$

$4 + \mathbf{n} = 7$

$\mathbf{n} - 8 = 2$

$10 - \mathbf{n} = 1$

$\mathbf{n} - 6 = 3$

$3 + 7 = \mathbf{n}$

$\mathbf{n} - 5 = 5$

$9 - \mathbf{n} = 7$

$10 - 7 = \mathbf{n}$

$4 + \mathbf{n} = 8$

Adding Three Numbers in a Row

Horizontal addition [O]

1. How many windows are in each of Nan's houses? Count to find how many in all.



Nan's Houses

2. Say the number story:
Two and one and three are six.

$$2 + 1 + 3 = ?$$

3. Count Rusty's windows and tell the number story.



Rusty's Houses

4. Count Jim's windows and tell the number story.

5. The dot picture is for 3 other groups of windows.

.



Jim's Houses

Tell the number story.

6. Sam's father gave him 4¢ one day, 3¢ another day, and 2¢ another. How much did he give Sam in all?

We write the number story from left to right this way:
"4¢ + 3¢ + 2¢ = 9¢." To add, begin at the left.

Think, "4 and 3 are 7, 7 and 2 are 9, 9¢."

Tell what to think to find these sums:

- | | | |
|---------------------|----------------------|--------------------------|
| 7. $2 + 2 + 3 = 7$ | 10. $3 + 2 + 3 = 8$ | 13. $6¢ + 1¢ + 3¢ = 10¢$ |
| 8. $1 + 2 + 5 = 8$ | 11. $2 + 7 + 1 = 10$ | 14. $3¢ + 2¢ + 4¢ = 9¢$ |
| 9. $6 + 2 + 2 = 10$ | 12. $1 + 7 + 1 = 9$ | 15. $2¢ + 3¢ + 2¢ = 7¢$ |

[W]

Make dots and write the addition for:

- | | | |
|-------------|-------------|----------------|
| 16. 2, 3, 2 | 17. 3, 1, 4 | 18. 5¢, 2¢, 1¢ |
|-------------|-------------|----------------|

Adding in a Row

Sums to 10 [W]

Copy in the left-to-right way the examples in rows 1 to 5. Then find and write the sums.

| a | b | c |
|--------------------|-----------------|-----------------|
| 1. $2 + 4 + 4 = ?$ | $4 + 2 + 3 = ?$ | $5 + 3 + 2 = ?$ |
| 2. $1 + 2 + 6 = ?$ | $2 + 4 + 2 = ?$ | $4 + 4 + 2 = ?$ |
| 3. $3 + 2 + 4 = ?$ | $5 + 4 + 1 = ?$ | $3 + 4 + 3 = ?$ |
| 4. $5 + 2 + 2 = ?$ | $4 + 2 + 4 = ?$ | $4 + 5 + 1 = ?$ |
| 5. $4 + 3 + 3 = ?$ | $6 + 2 + 1 = ?$ | $2 + 5 + 2 = ?$ |


Do You Know?

Progress Test 3 [W]

Add. Write the sums on folded paper.

| a | b | c | d | e | f | g | h | i |
|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|
| 1. 1 | 2 | 3 | 6 | 2 | 5 | 1 | 1 | 3¢ |
| <u>+3</u> | <u>+6</u> | <u>+2</u> | <u>+4</u> | <u>+5</u> | <u>+4</u> | <u>+8</u> | <u>+5</u> | <u>+7¢</u> |
| 2. 3 | 1 | 1 | 2 | 3 | 2 | 6 | 5 | 2¢ |
| <u>+4</u> | <u>+7</u> | <u>+9</u> | <u>+8</u> | <u>+5</u> | <u>+7</u> | <u>+2</u> | <u>+5</u> | <u>+2¢</u> |
| 3. 2 | 4 | 9 | 3 | 4 | 4 | 6 | 8 | 3¢ |
| <u>+4</u> | <u>+4</u> | <u>+1</u> | <u>+6</u> | <u>+6</u> | <u>+3</u> | <u>+3</u> | <u>+2</u> | <u>+3¢</u> |

The addition facts with answers are on page 128. Make study cards for facts you did not know.

 **Extra Practice.** Many times you will be asked to do extra practice sets of examples. They will help you work faster and get more answers right.

Turn to page 328 and work Sets 1 and 2. Then try rows 1 to 3 once more.



The Old Toy Sale

Problem-solving: differentiating A. and S. [W]

Add to find how many in all.

Subtract to find how many left.

Subtract to find how many gone.

For problems 1 to 4, write A. if you should add or S. if you should subtract. Then work the problems.

1. A drum costs 6¢. A horn costs 4¢. The two toys together cost how much?

2. All but 3 of the 9 toy clowns were sold. How many toy clowns were sold?

3. Tom gave 10¢ to pay for an 8¢ top. How much money did he get back?

4. Tom saw 3 red balls and 5 blue balls in the sale. How many balls were on sale?

[O]

Why did you write A. or S. ?

[W]

Copy for left-to-right adding and write sums.

| a | b | c | d |
|------------|---------|---------|------------|
| 1. 2, 4, 2 | 1, 6, 1 | 4, 3, 3 | 5¢, 3¢, 2¢ |
| 2. 3, 4, 2 | 2, 6, 2 | 1, 3, 4 | 1¢, 2¢, 3¢ |
| 3. 5, 1, 3 | 2, 3, 5 | 2, 5, 2 | 4¢, 1¢, 4¢ |
| 4. 6, 3, 1 | 3, 2, 2 | 2, 2, 5 | 2¢, 1¢, 6¢ |

➤ **Extra Practice.** Do Extra Practice Sets 3 and 4.



Column Addition

3 addends [O]

1. All three pictures show the same building.

In the first, 3 lights were on. In the second, there were 4 more lights on, and in the third, 2 more.

How many lights are on in the last picture?

2. In the last picture, are the things alike in all groups? Then you can put the groups together, or add.

You know how to write the number story in the left-to-right way, $3 + 4 + 2 = 9$. You can write it the up-and-down way too, as in box A. The numbers in box A are in a **column**.

| | |
|---|-----------|
| A | 3 |
| | 4 |
| | <u>+2</u> |
| | 9 |

3. To find the sum in box A, **add** the numbers in the column **downward** from the top.

Think, “3 and 4 are 7, 7 and 2 are _?_.”

How many lights are there in all?

| | | | |
|---|------|---|-----------|
| B | • | C | 1 |
| | ••• | | 3 |
| | •••• | | <u>+4</u> |
| | | | ? |

4. How many dots in all in box B? Find out by counting all of them.

5. Find out by adding

$$1 + 3 + 4 = ?$$

6. In box C, the numbers which stand for the dots are in a column. Add them downward.

Think, “1 and 3 are _?_, 4 and 4 are _?_.”

Tell what to think to get these sums:

| | a | b | c | d | e | f | g | h | i |
|----|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|
| 7. | 1 | 2 | 1 | 2 | 3 | 6 | 2¢ | 5¢ | 3¢ |
| | 4 | 4 | 2 | 3 | 2 | 2 | 5¢ | 1¢ | 1¢ |
| | <u>+3</u> | <u>+3</u> | <u>+5</u> | <u>+5</u> | <u>+2</u> | <u>+2</u> | <u>+3¢</u> | <u>+3¢</u> | <u>+4¢</u> |
| | 8 | 9 | 8 | 10 | 7 | 10 | 10¢ | 9¢ | 8¢ |

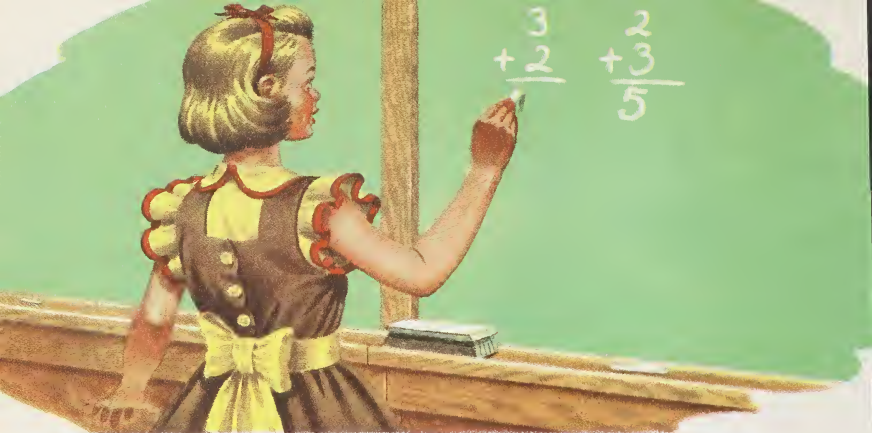
[W]

Write the sums for rows 8 to 12 on folded paper.

| | | | | | | | | | |
|-----|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|
| 8. | 2 | 3 | 1 | 2 | 4 | 6 | 2¢ | 5¢ | 2¢ |
| | 5 | 4 | 8 | 1 | 3 | 1 | 3¢ | 2¢ | 2¢ |
| | <u>+1</u> | <u>+2</u> | <u>+1</u> | <u>+6</u> | <u>+2</u> | <u>+3</u> | <u>+4¢</u> | <u>+1¢</u> | <u>+4¢</u> |
| 9. | 4 | 3 | 2 | 1 | 5 | 2 | 4¢ | 1¢ | 1¢ |
| | 1 | 3 | 1 | 5 | 3 | 6 | 4¢ | 3¢ | 4¢ |
| | <u>+3</u> | <u>+3</u> | <u>+7</u> | <u>+4</u> | <u>+2</u> | <u>+1</u> | <u>+2¢</u> | <u>+5¢</u> | <u>+5¢</u> |
| 10. | 2 | 1 | 4 | 3 | 1 | 3 | 4¢ | 3¢ | 2¢ |
| | 2 | 1 | 3 | 1 | 2 | 3 | 2¢ | 1¢ | 6¢ |
| | <u>+6</u> | <u>+7</u> | <u>+3</u> | <u>+6</u> | <u>+7</u> | <u>+2</u> | <u>+4¢</u> | <u>+5¢</u> | <u>+2¢</u> |
| 11. | 1 | 3 | 2 | 3 | 4 | 1 | 3¢ | 2¢ | 3¢ |
| | 6 | 5 | 4 | 2 | 2 | 7 | 6¢ | 1¢ | 3¢ |
| | <u>+1</u> | <u>+2</u> | <u>+4</u> | <u>+5</u> | <u>+2</u> | <u>+1</u> | <u>+1¢</u> | <u>+5¢</u> | <u>+4¢</u> |
| 12. | 1 | 3 | 2 | 3 | 4 | 1 | 3¢ | 2¢ | 4¢ |
| | 5 | 5 | 4 | 2 | 3 | 7 | 4¢ | 2¢ | 2¢ |
| | <u>+1</u> | <u>+1</u> | <u>+2</u> | <u>+3</u> | <u>+1</u> | <u>+2</u> | <u>+3¢</u> | <u>+5¢</u> | <u>+3¢</u> |

Copy the examples in row 10, and add again. Try hard to write the numbers one under another.

Write the examples in row 11 in the left-to-right way, and add again.



Changing Numbers Around

[O]

1. You know that most addition facts go in pairs.

$$2 + 3 = ?$$

$$3 + 2 = ?$$

2. In the picture, the 2 and the 3 are not in the same order in both facts. **Does changing the numbers around change the sum?**

A

$$5 + 1 + 2 = 8$$

$$1 + 5 + 2 = 8$$

$$2 + 5 + 1 = 8$$

$$5 + 2 + 1 = 8$$

3. In box A, are the same numbers added in all the examples?

4. Even if the numbers are changed around, what can you say about the answer?

B

$$3 \quad 3 \quad 4 \quad 2$$

$$2 \quad 4 \quad 2 \quad 4$$

$$\begin{array}{r} +4 \\ \hline ? \end{array} \begin{array}{r} +2 \\ \hline ? \end{array} \begin{array}{r} +3 \\ \hline ? \end{array} \begin{array}{r} +3 \\ \hline ? \end{array}$$

5. In box B, are the same numbers to be added in all examples?

6. Are the numbers in the same order each time in box B?

7. Find the sum for each example in box B.

8. Use the numbers 1, 4, and 2 to make four examples, each with numbers in a different order.

9. Turn to the top of page 40. Look at each of the examples in column a. Without adding, find an example in column b or in column c that has the same sum.

Ex. means “exercise” or “exercises.”

10. For Ex. 11a, find in row 12 or row 13 an example with the same numbers in different order. Do the same for the rest of the examples in row 11.

| | a | b | c | d | e | f | g | h | i |
|-----|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|
| 11. | 5 | 2 | 1 | 2 | 2 | 3 | 1¢ | 4¢ | 1¢ |
| | 4 | 7 | 3 | 2 | 2 | 3 | 2¢ | 3¢ | 5¢ |
| | <u>+1</u> | <u>+1</u> | <u>+6</u> | <u>+5</u> | <u>+4</u> | <u>+2</u> | <u>+5¢</u> | <u>+3¢</u> | <u>+3¢</u> |
| 12. | 6 | 1 | 4 | 4 | 1 | 5 | 5¢ | 5¢ | 3¢ |
| | 1 | 1 | 1 | 2 | 2 | 3 | 2¢ | 1¢ | 4¢ |
| | <u>+3</u> | <u>+8</u> | <u>+5</u> | <u>+2</u> | <u>+7</u> | <u>+2</u> | <u>+1¢</u> | <u>+3¢</u> | <u>+3¢</u> |
| 13. | 2 | 2 | 3 | 2 | 1 | 2 | 6¢ | 2¢ | 3¢ |
| | 4 | 5 | 2 | 2 | 8 | 4 | 2¢ | 3¢ | 5¢ |
| | <u>+3</u> | <u>+2</u> | <u>+3</u> | <u>+1</u> | <u>+1</u> | <u>+4</u> | <u>+2¢</u> | <u>+4¢</u> | <u>+2¢</u> |

Changing the order of the numbers to be added does not change the sum.

[W]

Write on folded paper the sums for rows 11 to 13.

14. Copy the examples in row 11 in the left-to-right way and add the numbers again.

► **Extra Practice.** Work Extra Practice Set 5.

Do You Know?

Progress Test 4 [W]

Write the remainders on folded paper.

| | a | b | c | d | e | f | g | h | i |
|----|--|--|---|---|---|---|--|---|---|
| 1. | $\begin{array}{r} 6 \\ -3 \\ \hline \end{array}$ | $\begin{array}{r} 9 \\ -1 \\ \hline \end{array}$ | $\begin{array}{r} 8 \\ -4 \\ \hline \end{array}$ | $\begin{array}{r} 10 \\ -3 \\ \hline \end{array}$ | $\begin{array}{r} 6 \\ -2 \\ \hline \end{array}$ | $\begin{array}{r} 7 \\ -4 \\ \hline \end{array}$ | $\begin{array}{r} 9 \\ -2 \\ \hline \end{array}$ | $\begin{array}{r} 4 \\ -1 \\ \hline \end{array}$ | $\begin{array}{r} 10\text{¢} \\ -6\text{¢} \\ \hline \end{array}$ |
| 2. | $\begin{array}{r} 5 \\ -1 \\ \hline \end{array}$ | $\begin{array}{r} 7 \\ -6 \\ \hline \end{array}$ | $\begin{array}{r} 10 \\ -8 \\ \hline \end{array}$ | $\begin{array}{r} 9 \\ -6 \\ \hline \end{array}$ | $\begin{array}{r} 8 \\ -5 \\ \hline \end{array}$ | $\begin{array}{r} 10 \\ -1 \\ \hline \end{array}$ | $\begin{array}{r} 3 \\ -1 \\ \hline \end{array}$ | $\begin{array}{r} 9 \\ -8 \\ \hline \end{array}$ | $\begin{array}{r} 7\text{¢} \\ -1\text{¢} \\ \hline \end{array}$ |
| 3. | $\begin{array}{r} 4 \\ -2 \\ \hline \end{array}$ | $\begin{array}{r} 8 \\ -3 \\ \hline \end{array}$ | $\begin{array}{r} 10 \\ -4 \\ \hline \end{array}$ | $\begin{array}{r} 6 \\ -1 \\ \hline \end{array}$ | $\begin{array}{r} 10 \\ -5 \\ \hline \end{array}$ | $\begin{array}{r} 8 \\ -2 \\ \hline \end{array}$ | $\begin{array}{r} 7 \\ -3 \\ \hline \end{array}$ | $\begin{array}{r} 10 \\ -9 \\ \hline \end{array}$ | $\begin{array}{r} 6\text{¢} \\ -5\text{¢} \\ \hline \end{array}$ |
| 4. | $\begin{array}{r} 5 \\ -4 \\ \hline \end{array}$ | $\begin{array}{r} 9 \\ -3 \\ \hline \end{array}$ | $\begin{array}{r} 7 \\ -5 \\ \hline \end{array}$ | $\begin{array}{r} 10 \\ -2 \\ \hline \end{array}$ | $\begin{array}{r} 9 \\ -7 \\ \hline \end{array}$ | $\begin{array}{r} 5 \\ -3 \\ \hline \end{array}$ | $\begin{array}{r} 9 \\ -5 \\ \hline \end{array}$ | $\begin{array}{r} 8 \\ -1 \\ \hline \end{array}$ | $\begin{array}{r} 10\text{¢} \\ -7\text{¢} \\ \hline \end{array}$ |
| 5. | $\begin{array}{r} 8 \\ -7 \\ \hline \end{array}$ | $\begin{array}{r} 4 \\ -3 \\ \hline \end{array}$ | $\begin{array}{r} 6 \\ -4 \\ \hline \end{array}$ | $\begin{array}{r} 7 \\ -2 \\ \hline \end{array}$ | $\begin{array}{r} 9 \\ -4 \\ \hline \end{array}$ | $\begin{array}{r} 3 \\ -2 \\ \hline \end{array}$ | $\begin{array}{r} 8 \\ -6 \\ \hline \end{array}$ | $\begin{array}{r} 5 \\ -2 \\ \hline \end{array}$ | $\begin{array}{r} 2\text{¢} \\ -1\text{¢} \\ \hline \end{array}$ |

The answers to the above examples are on page 132.
Make study cards for facts you do not know.

► **Extra Practice.** Work Extra Practice Sets 6 and 7 until you know the facts. Then try rows 1 to 5 again.

Can You Work Problems?

Problem Test 1

1. Mary asked 5 little girls and 4 big girls to her party.
How many girls did she ask?

2. The children brought Mary 2 animal books, 3 story books, and 3 books about children in other countries.
How many books was that in all?

3. Mary's mother made 10 little cakes. After the party, 2 cakes were left. How many cakes were gone?

4. For prizes Mary bought a pencil for 2¢, a ball for 4¢, and a toy drum for 4¢. How much did the prizes cost?

5. Mary bought a balloon for 7¢. She gave 10¢ to pay for it. How much did she get back?

6. Of the 9 children, 2 stayed a long time. How many children went home early?

If you missed problems, look again at page 6 for help in addition and pages 22 and 36 for help in subtraction.

Do You Know?

Progress Test 5 [W]

Write answers on folded paper. Watch the signs!

| | a | b | c | d | e | f | g | h | i |
|----|--|---|--|--|---|--|--|---|---|
| 1. | $\begin{array}{r} 8 \\ -5 \\ \hline \end{array}$ | $\begin{array}{r} 2 \\ +8 \\ \hline \end{array}$ | $\begin{array}{r} 9 \\ -8 \\ \hline \end{array}$ | $\begin{array}{r} 2 \\ +7 \\ \hline \end{array}$ | $\begin{array}{r} 10 \\ -2 \\ \hline \end{array}$ | $\begin{array}{r} 7 \\ -5 \\ \hline \end{array}$ | $\begin{array}{r} 7 \\ +3 \\ \hline \end{array}$ | $\begin{array}{r} 9¢ \\ -2¢ \\ \hline \end{array}$ | $\begin{array}{r} 10¢ \\ -9¢ \\ \hline \end{array}$ |
| 2. | $\begin{array}{r} 8 \\ +2 \\ \hline \end{array}$ | $\begin{array}{r} 10 \\ -6 \\ \hline \end{array}$ | $\begin{array}{r} 3 \\ +5 \\ \hline \end{array}$ | $\begin{array}{r} 8 \\ -7 \\ \hline \end{array}$ | $\begin{array}{r} 4 \\ +5 \\ \hline \end{array}$ | $\begin{array}{r} 6 \\ +2 \\ \hline \end{array}$ | $\begin{array}{r} 9 \\ -5 \\ \hline \end{array}$ | $\begin{array}{r} 2¢ \\ +6¢ \\ \hline \end{array}$ | $\begin{array}{r} 7¢ \\ -2¢ \\ \hline \end{array}$ |
| 3. | $\begin{array}{r} 7 \\ -4 \\ \hline \end{array}$ | $\begin{array}{r} 6 \\ +4 \\ \hline \end{array}$ | $\begin{array}{r} 9 \\ -7 \\ \hline \end{array}$ | $\begin{array}{r} 3 \\ +4 \\ \hline \end{array}$ | $\begin{array}{r} 7 \\ -6 \\ \hline \end{array}$ | $\begin{array}{r} 3 \\ +7 \\ \hline \end{array}$ | $\begin{array}{r} 5 \\ -3 \\ \hline \end{array}$ | $\begin{array}{r} 10¢ \\ -4¢ \\ \hline \end{array}$ | $\begin{array}{r} 9¢ \\ -3¢ \\ \hline \end{array}$ |
| 4. | $\begin{array}{r} 9 \\ -4 \\ \hline \end{array}$ | $\begin{array}{r} 4 \\ +3 \\ \hline \end{array}$ | $\begin{array}{r} 8 \\ -6 \\ \hline \end{array}$ | $\begin{array}{r} 6 \\ +3 \\ \hline \end{array}$ | $\begin{array}{r} 10 \\ -7 \\ \hline \end{array}$ | $\begin{array}{r} 2 \\ +5 \\ \hline \end{array}$ | $\begin{array}{r} 7 \\ -3 \\ \hline \end{array}$ | $\begin{array}{r} 5¢ \\ +3¢ \\ \hline \end{array}$ | $\begin{array}{r} 8¢ \\ -3¢ \\ \hline \end{array}$ |
| 5. | $\begin{array}{r} 3 \\ +6 \\ \hline \end{array}$ | $\begin{array}{r} 10 \\ -3 \\ \hline \end{array}$ | $\begin{array}{r} 7 \\ +2 \\ \hline \end{array}$ | $\begin{array}{r} 9 \\ -6 \\ \hline \end{array}$ | $\begin{array}{r} 4 \\ +6 \\ \hline \end{array}$ | $\begin{array}{r} 8 \\ -2 \\ \hline \end{array}$ | $\begin{array}{r} 5 \\ +4 \\ \hline \end{array}$ | $\begin{array}{r} 10¢ \\ -8¢ \\ \hline \end{array}$ | $\begin{array}{r} 6¢ \\ -2¢ \\ \hline \end{array}$ |

► **Extra Practice.** Work Extra Practice Set 8.

Do You Make Mistakes?

Diagnostic Test 1

Tests like this help you to find where you make mistakes, and why you make them. You will have other tests like this one.

Write the answers on folded paper. Take your time, and try to make no mistakes.

| | a | b | c | d | e | Study Pages | Practice Sets |
|----|--|---------------------|---------------------|---------------------|------------------------|-------------|---------------|
| 1. | 10 <u>-6</u> | 8 <u>-6</u> | 2 <u>+7</u> | 10 <u>-8</u> | 3¢ <u>+5¢</u> | | |
| 2. | 7 <u>-4</u> | 4 <u>+6</u> | 10 <u>-3</u> | 2 <u>+5</u> | 8¢ <u>-5¢</u> | 11 and 24 | 1, 2, 6, 7, 8 |
| 3. | 5 3 <u>+1</u> | 5 1 <u>+4</u> | 1 5 <u>+2</u> | 4 2 <u>+3</u> | 3¢ 2¢ <u>+2¢</u> | 42 | 5 |
| 4. | a. $5 + 4 + 1 = ?$ b. $2 + 6 + 2 = ?$ c. $4¢ + 3¢ + 2¢ = ?$ d. $1¢ + 6¢ + 3¢ = ?$ | | | | | 39 | 3, 4 |

For mistakes in rows 1 and 2, study pages 11 and 24. For Extra Practice, use Sets 1, 2, 6, 7, and 8.

For mistakes in row 3, study page 42. For Extra Practice, use Set 5. For row 4, study page 39. Then work Extra Practice Sets 3 and 4.

After you have done this, take the test again.

Do You Understand?

Test of Information and Meaning 1

Write only the answers for Ex. 1 to 9.

1. The sum of $2 + 4 + 1$ is 7, so $1 + 2 + 4 = ?$
2. What are answers in subtraction called?
3. What subtraction fact goes with $10 - 6 = 4$?
4. Does $3 + 3 = 6$ go with another addition fact?
5. Before they can be added or subtracted, must the things in the groups be alike?
6. In $7 - 3, = n$ what number does n stand for?
7. How do you find how many are gone?
8. How do you find how many are left?
9. Is this line longer than 4 inches? _____

How Well Can You Figure?

Computation Test 1

Write the answers on folded paper.

| | a | b | c | d | e | f | g | h | i |
|----|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|
| 1. | 4 | 6 | 7 | 2 | 10 | 2 | 7 | 10¢ | 7¢ |
| | <u>+5</u> | <u>+4</u> | <u>-4</u> | <u>+7</u> | <u>-7</u> | <u>+6</u> | <u>-5</u> | <u>-3¢</u> | <u>-6¢</u> |
| 2. | 9 | 4 | 8 | 4 | 3 | 8 | 7 | 10¢ | 6¢ |
| | <u>-6</u> | <u>+3</u> | <u>+2</u> | <u>+6</u> | <u>+5</u> | <u>-6</u> | <u>+3</u> | <u>-6¢</u> | <u>+2¢</u> |
| 3. | 2 | 3 | 9 | 10 | 8 | 5 | 7 | 10¢ | 4¢ |
| | <u>+8</u> | <u>+7</u> | <u>-3</u> | <u>-9</u> | <u>-3</u> | <u>+4</u> | <u>-3</u> | <u>-8¢</u> | <u>+4¢</u> |
| 4. | 4 | 5 | 3 | 3 | 2 | 2 | 2 | 4¢ | 4¢ |
| | 2 | 4 | 2 | 4 | 5 | 3 | 2 | 1¢ | 3¢ |
| | <u>+2</u> | <u>+1</u> | <u>+3</u> | <u>+1</u> | <u>+3</u> | <u>+2</u> | <u>+4</u> | <u>+5¢</u> | <u>+3¢</u> |



Using a Ten-Group

Meaning of 10 to 19 [O]

1. In the picture, how many pencils has Jim? Can you tell how many just by looking? Why?

2. Can you count the pencils to find how many?

3. Is it easy to count the pencils one by one? Why, or why not?

Lucy has just as many pencils as Jim has, but her pencils are in two groups. One group is a **10-bundle**. The other group is the rest of her pencils.

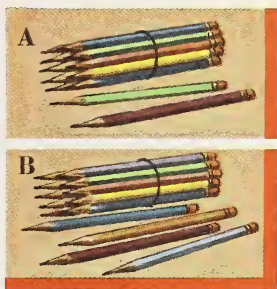
4. How many pencils has Lucy besides the 10-bundle?




5. How many pencils has Lucy in all? The number story is: 1 ten and 6 ones are 16.

6. With 10 pencils in a group, is it easy to tell how many in all? Why?

7. How many pencils are in picture A? in picture B?

8. In Ex. 5 you learned the number story for 16. Say the number stories for the pencils in pictures A and B.



Remember: We shall let  stand for 10 and mean a 10-bundle.  means "1 ten and 7 ones," or "17." We call  a bundle picture for 17.

HELPER: The dot helps you to see 5 ones right away.

Each number from 10 to 19 has 1 ten.

Adding to a Ten

[W]

For Ex. 1 to 3 below, use the bundle-pictures.

1. $14 = 1 \text{ ten and } _? \text{ ones.}$ 

2. $_? = 1 \text{ ten and } 6 \text{ ones.}$ 

3. $1 \text{ ten and } 3 \text{ ones} = _?.$ 

An easy picture of 10 when you draw it is Φ . Sue made bundle-pictures 4 to 7 below. Write the number story with figures for these Φ -pictures. For Ex. 4 write, "10 + 5 = 15."

4. $\Phi | / \backslash //$ 5. $\Phi \backslash \backslash \backslash // \cdot \backslash \backslash$ 6. $\Phi \backslash \backslash \backslash //$ 7. $\Phi \backslash \backslash \backslash \cdot \backslash \backslash \backslash$

Make Φ -pictures for Ex. 8 to 13.

8. 16 9. 12 10. 15 11. 18 12. 19 13. 14

Copy Ex. 14 to 19 and write the sums.

14. $10 + 5 = ?$ 16. $10 + 6 = ?$ 18. 10 19. 10
15. $10 + 3 = ?$ 17. $10 + 1 = ?$ +9 +4

The numbers 11 to 19 are made up of a ten and some ones.

[O]

20. In 16, does the left or the right figure mean "ten"?

21. In the number 11, what does the 1 at the right mean? What does the 1 at the left mean?

22. In the number 10, are there any ones in one's place? Remember: 0 means "not any."

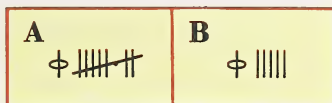
23. Why do you think numbers like 13 and 16 are called "teen" numbers?

Subtracting to Make a Ten

[O]

1. Ann had 17 baby chicks. She gave away 7. Then how many did she have?

Picture A shows the number 17. The 7 ones are crossed out to show that they are taken away. The story is: 17 take away 7 is 10.



2. Picture B shows 15. If the 5 ones were taken away, how many would be left? 15 take away 5 = ? 15 - 5 = ?

Sue made the ϕ -pictures in Ex. 3 to 6. Tell each story.

3. ϕ 4. ϕ 5. ϕ 6. ϕ

[W]

Now write number stories for Ex. 3 to 6. For Ex. 3 write, "13 - 3 = 10."

Draw ϕ -pictures and cross out ones for Ex. 7 to 12.

7. 14 - 4 = ? 9. 16 - 6 = ? 11. 19 12. 12
8. 11 - 1 = ? 10. 13 - 3 = ? -9 -2

Now copy Ex. 7 to 12 and write the answers.

When you take away the ones from a teen number, a ten is left.

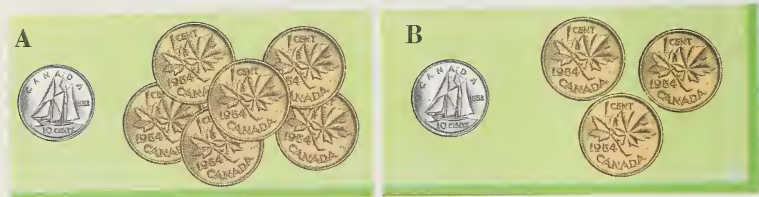
Make ϕ -pictures and write number stories for these:

13. Tom caught 15 fish. He threw 5 small fish back. Then he had how many fish to take home?

14. Mary picked 19 flowers. Then she gave away 9 of them. She had how many flowers left?

Are Dimes and Cents Like Tens and Ones?

Money numbers [O]



1. In picture A there are a dime and 6 cents. How does the picture show **a ten-group**?

2. The group of cents is **a group of ones**. Tell how many ones there are in picture A.

3. You know how to add a ten and some ones. So, in picture A, $10¢ + 6¢ = ?$

4. In picture B, $10¢ + 3¢ = ?$

5. Cover the 6 cents in picture A. $16¢ - 6¢ = ?$

6. If the 3 cents in picture B were lost, how much money would be left? $13¢ - 3¢ = ?$

[W]

Write answers on folded paper. Watch the signs!

| a | b | c | d | e | f | g |
|----------|-------|-------|-------|-------|-------|-------|
| 7. $10¢$ | $11¢$ | $15¢$ | $10¢$ | $14¢$ | $10¢$ | $10¢$ |
| $+3¢$ | $-1¢$ | $-5¢$ | $+2¢$ | $-4¢$ | $+9¢$ | $+5¢$ |
| 8. $10¢$ | $10¢$ | $13¢$ | $12¢$ | $10¢$ | $10¢$ | $19¢$ |
| $+7¢$ | $+1¢$ | $-3¢$ | $-2¢$ | $+8¢$ | $+4¢$ | $-9¢$ |

Make ϕ -pictures for examples you missed. Then go back and see how quickly you can think answers for all the examples.

Money Problems

Work these problems. ^[W]
In
some problems you add. In
some, you subtract.



1. Ann had 8 cents in her bank. She put in 2 more cents. Then she had how many cents in her bank?

2. Tom had 17¢ in his bank. He took out 7¢. How much was left in his bank?

3. Rusty left home with 9¢. When he got to school, he had only 7¢. How much had he lost?

4. Jean paid 4¢ for candy and had 4¢ left for school savings. How much did she have at first?

5. Susan had 13¢. She gave 3¢ to her little friend. How much did she have left?

6. Bob has earned 10¢. When he has earned 3¢ more, how much will he have in all?

7. A toy lamb costs 3¢. A toy horse costs 4¢. A toy cow costs 3¢. These toys cost how much in all?

8. Mary had 9¢. She paid for a bag of peanuts and had 4¢ left. How much did the peanuts cost?

9. Roy has a dime and 5 pennies to spend. How much can he spend?

Tell why you added or subtracted in each problem.

[O]



What Two-Place Numbers Mean

Numbers to 99 [O]

1. Here are buttons from Mother's button box! Nan put them in equal groups. How many buttons in all?

2. Did you count by 1's? Why?

3. There is an easier way than counting by 1's. Each group has $\cdot \cdot \cdot$ buttons. Is each group a ten-group?

4. There are how many ten-groups in all? Count the ten-groups: 1 ten, $\cdot \cdot \cdot$, $\cdot \cdot \cdot$.





5. Nan had how many buttons in all? 3 tens = ?



6. How many dots are in box A? Count the tens. 2 tens = ?

7. How many dots are in box B? Count the tens. 5 tens = ?


If we use  to mean "10," or "10 things," tell what numbers these -pictures show.

8. 

9. 

10. 



11. Box C shows what number? The three s make 30. How many ones are there? $30 + \cdot \cdot \cdot = ?$

12. Make a box like the one at the right.
In it make ϕ -pictures for these numbers:

- a. 23 b. 91 c. 24 d. 40 e. 26

Numbers with two figures, like 23 and 40, are called two-place numbers.

13. In 84, the 8 is in **ten's place**. When written in this place, 8 means 8 _?_.

14. In 38, the 8 is in **one's place**. When written in this place, 8 means 8 _?_.

15. Which figures are in ten's place?

- a. 52 b. 38 c. 93 d. 60

Copy and finish Ex. 16 to 18.

16. 27 = _?_ tens and 7 ones

17. 83 = 8 tens and _?_ ones

18. 4 tens and 9 ones = _?_

Make a box like the one at the right. In it, write numbers for these ϕ -pictures.

19. $\phi\phi$ ||||

21. $\phi\phi\phi\phi\phi$

23. $\phi\phi$ ||||| \cdot ||||

20. $\phi\phi\phi\phi$ ||||

22. ϕ ||||| \cdot ||||

24. $\phi\phi\phi$ ||

| ϕ 's | l's |
|---------------|-----|
| a. $\phi\phi$ | |

| | Ten's place | One's place |
|-----|-------------|-------------|
| 19. | 2 | 3 |
| 20. | 4 | ? |

Two-place numbers (numbers from 10 to 99)
tell how many tens and how many ones.

The figure in the first place (at the right)
tells how many ones (besides the tens).

The figure in the second place (at the left)
tells how many tens.



Selling Tickets

Higher-decade addition; no carrying [O]

“Good morning,” said Ann to Mrs. Ames. “Would you like to buy some of the tickets for our school play? I’ve sold 24 tickets. Now I’ve taken 5 more to sell.”

Ex. 1 to 4 show four ways to find how many tickets Ann took in all.


1. Use the picture below to find how many tickets in all Ann took. Explain what you did.



Tickets Ann took first

Tickets Ann took next

2. Explain how to use -numbers in box A below.

| A | B | C |
|---|--|--|
|  | $ \begin{array}{r} 2 \text{ tens and } 4 \text{ ones} \\ + \quad \quad \quad 5 \text{ ones} \\ \hline 2 \text{ tens and } 9 \text{ ones,} \\ \text{or } 29 \end{array} $ | $ \begin{array}{r} 24 \\ + 5 \\ \hline 29 \end{array} $ |

3. Another way is to add 24 and 5 by using tens and ones, as in box B. $4 \text{ ones} + 5 \text{ ones} = 9 \text{ ones}$. Is there anything to add to the 2 tens?

4. Can you work the short way as in box C? **First add the ones**, 4 and 5. *Think*, “9” and write “9” in one’s place in the sum. Then **write “2” in ten’s place**.

Joe sold 6 tickets and Mike sold 32. How many tickets did the two boys sell together?

See if you can get the same answer in four ways by working Ex. 5 to 8.

5. Find the sum of $6 + 32$ from the picture.



Joe's Tickets



Mike's Tickets

Tell how the sum of $6 + 32$ is found

6. in box D. 7. in box E. 8. in box F.

| D | E | F |
|---|--|--|
| | $ \begin{array}{r} 6 \text{ ones} \\ + 3 \text{ tens and } 2 \text{ ones} \\ \hline 3 \text{ tens and } 8 \text{ ones,} \\ \text{or } 38 \end{array} $ | $ \begin{array}{r} 6 \\ + 32 \\ \hline 38 \end{array} $ |

9. Tell how to find $41 + 7$ in boxes G, H, and I.

| G | H | I |
|---|---|--|
| | $ \begin{array}{r} 4 \text{ tens and } 1 \text{ one} \\ + \quad \quad 7 \text{ ones} \\ \hline 4 \text{ tens and } 8 \text{ ones,} \\ \text{or } 48 \end{array} $ | $ \begin{array}{r} 41 \\ + 7 \\ \hline 48 \end{array} $ |

10. Which way do you like best—G, H, or I? Why?

[W]

Do each of these examples in three ways, as in boxes G, H, and I:

11. $23 + 6$ 12. $13 + 4$ 13. $2 + 17$ 14. $34 + 5$

Addition Families

Higher-decade A.; no carrying [O]



1. In the examples in the pictures, do you add $3 + 5$ each time?



2. To find the sum of 13 and 5 *think*,
 3 and 5 are 8 , so 13 and 5 are 18 .

3. To find the sum of 23 and 5 *think*,
 3 and 5 are 8 , so 23 and 5 are $-?-$.



4. Tell how to find the sums for the other examples in the pictures.

5. The examples in the pictures are in the $3 + 5$ family. Tell two more examples in this family.



6. Look at the examples in box A. Each example is in the $7 + -?-$ family. Explain.

| A | B | | | |
|---|---|---|---|---|
| $\begin{array}{r} 7 \\ +12 \\ \hline \end{array}$ | $\begin{array}{r} 7 \\ +32 \\ \hline \end{array}$ | $\begin{array}{r} 7 \\ +82 \\ \hline \end{array}$ | $\begin{array}{r} 7 \\ +22 \\ \hline \end{array}$ | $\begin{array}{r} 24 \\ +5 \\ \hline \end{array}$ |
| | | | | $\begin{array}{r} 54 \\ +5 \\ \hline \end{array}$ |
| | | | | $\begin{array}{r} 14 \\ +5 \\ \hline \end{array}$ |
| | | | | $\begin{array}{r} 84 \\ +5 \\ \hline \end{array}$ |

7. Say two other examples in the $7 + 2$ family.

8. To add 7 and 12 *think*,
 7 and 2 are 9 , so 7 and 12 are 19 .

Find the sums for the other examples in box A. Think them the same way.

9. The examples in box B are in what family?

10. Tell how to find the sums in box B. Think them the same way as in Ex. 8.

Say the sums for these:

| | a | b | c | d | | a | b | c | d |
|-----|-----------|-----------|-----------|-----------|-----|------------|------------|------------|------------|
| 11. | 12 | 32 | 62 | 42 | 12. | 5 | 5 | 5 | 5 |
| | <u>+6</u> | <u>+6</u> | <u>+6</u> | <u>+6</u> | | <u>+22</u> | <u>+12</u> | <u>+42</u> | <u>+62</u> |

Write on the board three examples that are parts of
 13. the $1 + 7$ family. 14. the $6 + 3$ family.

Each of these is part of what addition family?

15. $53 + 4$ 16. $2 + 25$ 17. $3 + 43$ 18. $74 + 2$

[W]

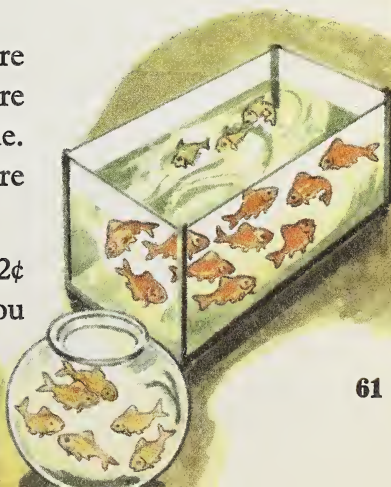
Copy Ex. 19 to 33 and write the sums. For Ex. 19
think, "2 and 4 are 6, so 32 and 4 are 36."

| | | | | | | | | | |
|-----|------------|-----|------------|-----|------------|-----|------------|-----|-------------|
| 19. | 32 | 20. | 75 | 21. | 91 | 22. | 52 | 23. | 86¢ |
| | <u>+4</u> | | <u>+1</u> | | <u>+8</u> | | <u>+3</u> | | <u>+2¢</u> |
| 24. | 4 | 25. | 1 | 26. | 3 | 27. | 2 | 28. | 4¢ |
| | <u>+43</u> | | <u>+65</u> | | <u>+62</u> | | <u>+57</u> | | <u>+91¢</u> |
| 29. | 64 | 30. | 46 | 31. | 7 | 32. | 5 | 33. | 35¢ |
| | <u>+4</u> | | <u>+1</u> | | <u>+71</u> | | <u>+53</u> | | <u>+4¢</u> |

Work problems 34 and 35.

34. In the large dish there are 10 and $-\frac{1}{2}$ goldfish. There are $-\frac{1}{2}$ goldfish in the round one. How many goldfish are there in all? $13 + 6 = ?$

35. If you have 22¢ and find 2¢ more, how much money will you have then?





A Quicker Way to Add

[O]

1. Tom found a nest of 5 eggs. He put them in a basket with 32 other eggs. Then how many eggs were in the basket?

a. You can *think*,

$$2 + 5 = 7, \quad \text{so} \quad 32 + 5 = 37.$$

b. It is quicker just to **look** at 32 and 5 **and think**, "37."

Find sums the quick way for the examples in row 2.

| | a | b | c | d | e | f | g |
|----|------------|-----------|-----------|------------|------------|------------|------------|
| 2. | 5 | 22 | 43 | 5 | 4 | 3 | 2 |
| | <u>+31</u> | <u>+5</u> | <u>+6</u> | <u>+94</u> | <u>+83</u> | <u>+84</u> | <u>+73</u> |

[W]

Write just the sums on folded paper. Find the sums the new quick way.

| | | | | | | | |
|----|------------|------------|------------|------------|------------|------------|-------------|
| 3. | 41 | 25 | 3 | 61 | 13 | 64 | 26¢ |
| | <u>+5</u> | <u>+3</u> | <u>+35</u> | <u>+4</u> | <u>+5</u> | <u>+3</u> | <u>+2¢</u> |
| 4. | 6 | 53 | 3 | 82 | 72 | 8 | 6¢ |
| | <u>+31</u> | <u>+6</u> | <u>+13</u> | <u>+4</u> | <u>+7</u> | <u>+71</u> | <u>+43¢</u> |
| 5. | 53 | 2 | 3 | 17 | 54 | 1 | 34¢ |
| | <u>+2</u> | <u>+75</u> | <u>+85</u> | <u>+2</u> | <u>+2</u> | <u>+67</u> | <u>+5¢</u> |
| 6. | 14 | 2 | 74 | 83 | 22 | 5 | 5¢ |
| | <u>+4</u> | <u>+32</u> | <u>+2</u> | <u>+6</u> | <u>+6</u> | <u>+44</u> | <u>+72¢</u> |
| 7. | 21 | 2 | 33 | 4 | 6 | 7 | 25¢ |
| | <u>+8</u> | <u>+46</u> | <u>+5</u> | <u>+23</u> | <u>+31</u> | <u>+61</u> | <u>+3¢</u> |

► **Extra Practice.** Work Sets 9 and 10.

Using Addition Families

Column addition [O]

1. Joe's father has 22 cows in the barn, 2 more in the barnyard, and 5 more in a field. How many cows has he in all?

$$\begin{array}{r} 22 \\ 2 \\ +5 \\ \hline ? \end{array}$$

Use addition families. See the example in the box. **Look** at 22 and 2. **Think**, “-?-.” **Look** at 5. **Think**, “-?-.” ($24 + 5 = ?$)

Tell how the sums were found in row 2.

| | a | b | c | d | e | f | g |
|----|-----------|-----------|-----------|-----------|-----------|-----------|------------|
| 2. | 23 | 31 | 63 | 12 | 11 | 13 | 22¢ |
| | 4 | 4 | 1 | 5 | 2 | 2 | 4¢ |
| | <u>+2</u> | <u>+3</u> | <u>+5</u> | <u>+1</u> | <u>+5</u> | <u>+4</u> | <u>+3¢</u> |
| | 29 | 38 | 69 | 18 | 18 | 19 | 29¢ |

[W]

Write the sums for rows 3 to 5 on folded paper.

| | | | | | | | |
|----|-----------|-----------|-----------|-----------|-----------|-----------|------------|
| 3. | 13 | 81 | 34 | 42 | 73 | 32 | 53¢ |
| | 1 | 1 | 1 | 3 | 3 | 6 | 4¢ |
| | <u>+3</u> | <u>+7</u> | <u>+2</u> | <u>+2</u> | <u>+2</u> | <u>+1</u> | <u>+2¢</u> |
| 4. | 12 | 44 | 63 | 71 | 32 | 53 | 21¢ |
| | 2 | 2 | 5 | 3 | 4 | 4 | 5¢ |
| | <u>+4</u> | <u>+1</u> | <u>+1</u> | <u>+5</u> | <u>+2</u> | <u>+2</u> | <u>+3¢</u> |
| 5. | 83 | 41 | 74 | 43 | 52 | 35 | 62¢ |
| | 3 | 5 | 2 | 2 | 5 | 2 | 3¢ |
| | <u>+3</u> | <u>+2</u> | <u>+3</u> | <u>+2</u> | <u>+2</u> | <u>+2</u> | <u>+3¢</u> |

When you add columns, you may need to use addition families.

► **Extra Practice.** Work Sets 11 and 12.

To Keep in Practice

[W]

A. stands for **addition** and S. for **subtraction**.

Write the answers to these A. and S. examples. For rows 1 to 3 use folded paper.

| | a | b | c | d | e | f | g |
|----|---|---|---|---|---|---|---|
| 1. | $\begin{array}{r} 23 \\ +6 \\ \hline \end{array}$ | $\begin{array}{r} 10 \\ -8 \\ \hline \end{array}$ | $\begin{array}{r} 10 \\ +7 \\ \hline \end{array}$ | $\begin{array}{r} 17 \\ -7 \\ \hline \end{array}$ | $\begin{array}{r} 83 \\ +5 \\ \hline \end{array}$ | $\begin{array}{r} 10 \\ -6 \\ \hline \end{array}$ | $\begin{array}{r} 4\text{¢} \\ +35\text{¢} \\ \hline \end{array}$ |
| 2. | $\begin{array}{r} 9 \\ -6 \\ \hline \end{array}$ | $\begin{array}{r} 18 \\ -8 \\ \hline \end{array}$ | $\begin{array}{r} 10 \\ +3 \\ \hline \end{array}$ | $\begin{array}{r} 7 \\ +52 \\ \hline \end{array}$ | $\begin{array}{r} 8 \\ -6 \\ \hline \end{array}$ | $\begin{array}{r} 10 \\ +9 \\ \hline \end{array}$ | $\begin{array}{r} 10\text{¢} \\ +4\text{¢} \\ \hline \end{array}$ |
| 3. | $\begin{array}{r} 2 \\ +67 \\ \hline \end{array}$ | $\begin{array}{r} 85 \\ +4 \\ \hline \end{array}$ | $\begin{array}{r} 9 \\ -7 \\ \hline \end{array}$ | $\begin{array}{r} 16 \\ -6 \\ \hline \end{array}$ | $\begin{array}{r} 6 \\ +92 \\ \hline \end{array}$ | $\begin{array}{r} 10 \\ -7 \\ \hline \end{array}$ | $\begin{array}{r} 4\text{¢} \\ +43\text{¢} \\ \hline \end{array}$ |

Copy in columns and add.

- | | | |
|-----------------|-----------------|---------------------------------------|
| 4. $21 + 4 + 3$ | 6. $5 + 1 + 4$ | 8. $11\text{¢}, 3\text{¢}, 2\text{¢}$ |
| 5. $6 + 2 + 2$ | 7. $72 + 3 + 2$ | 9. $4\text{¢}, 4\text{¢}, 2\text{¢}$ |

Make Your Own Problems

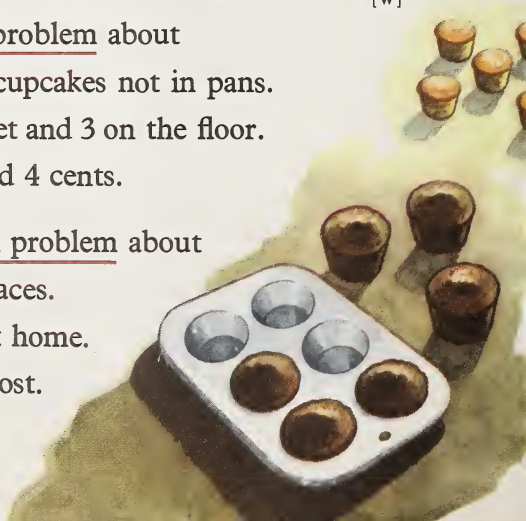
[W]

Write an addition problem about

- the two groups of cupcakes not in pans.
- 6 puppies in a basket and 3 on the floor.
- 3 cents, 2 cents, and 4 cents.

Write a subtraction problem about

- the pan's empty places.
- 8 children; 3 went home.
- 10¢ ; a nickel was lost.



Do You Know?

Progress Test 6 [W]

On folded paper write answers for Ex. 1 to 10.

- | | | | | |
|--------------------|--------------------|--------------------|--------------------|-----------------------|
| 1. 14 <u>-4</u> | 2. 33 <u>+6</u> | 3. 10 <u>-8</u> | 4. 6 <u>+22</u> | 5. 4¢ <u>+6¢</u> |
| 6. 9 <u>-6</u> | 7. 18 <u>-8</u> | 8. 5 <u>+33</u> | 9. 8 <u>-5</u> | 10. 3¢ <u>+52¢</u> |

Copy in columns and add.

- | | | |
|--------------|-------------|-----------------|
| 11. 52, 3, 4 | 13. 2, 1, 7 | 15. 43¢, 4¢, 2¢ |
| 12. 21, 6, 2 | 14. 3, 3, 4 | 16. 12¢, 4¢, 2¢ |

Write answers for Ex. 17 to 28.

17. The answer for $17 - 7$ has what name?

18. In subtraction where do you put the larger number when you write the example the up-and-down way? when you write it the left-to-right way?

19. In 72, is the 7 in one's or ten's place?

20. Make a ϕ -picture for the example $4 + 23 = ?$

21. Has $35 + 4$ the same sum as $4 + 35$?

22. Write 3 examples in the A. family for $2 + 5$.

23. Write a number with 6 in ten's place.

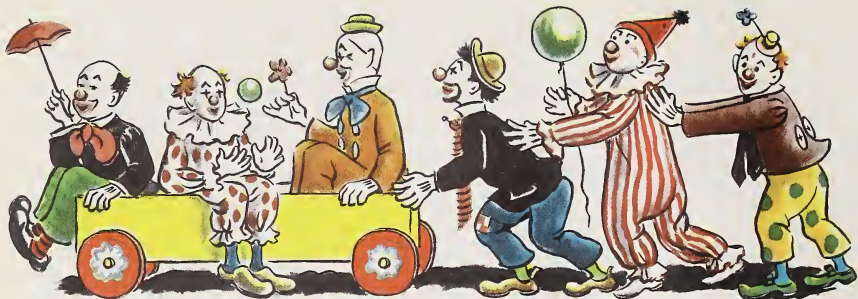
24. Write a number with 9 in one's place.

25. Do 10 cents make a nickel or a dime?

26. Write three 2-place numbers.

27. Write three 1-place numbers.

28. Write out the pairs of parts that make 10.



Clowns in the Parade

The other-part idea in S. [O]

Four of the 6 clowns have hats. How many clowns have no hats?

1. You can find out by counting. How many?
2. Or, you can find out by subtracting.

This is a find-the-other-part problem. In the picture, cover the 4 clowns that have hats. You see the clowns with no hats.

$$6 \text{ clowns} - 4 \text{ clowns} = 2 \text{ clowns.}$$

$$\begin{array}{r} 6 \\ -4 \\ \hline 2 \end{array}$$

You know a number, 6, and one of its parts, 4. You subtract to find the other part.

$$6 - 4 = 2$$

3. Three of the 6 clowns jumped into a cart. The other clowns pushed the cart. How many clowns pushed the cart?

HELPER: When one of the two parts of 6 is 3, the other part must be 3. $6 - 3 = ?$

If you know a number and one of its two parts, you subtract to find the other part.

Finding the Other Part

[O]

For Ex. 1 to 6, say the answers and tell why you subtracted.

1. For this cake I need 7 eggs. I have only 5. How many more do I need?

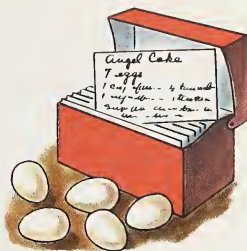
2. Ten children were marching. Six of them were girls. How many boys were marching?

3. Two of my 10 marbles are red. The rest are blue. How many blue marbles have I?

4. A toy costs 15¢. I have only 5¢. How much more money do I need to buy the toy?

5. Our side has won 8 of 10 games. The other side has won how many games?

6. Jean has 9¢. Part of her money is a nickel. How many pennies has she?



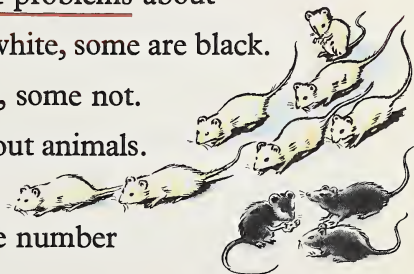
[W]

Write your own other-part problems about

7. 10 pet mice; some are white, some are black.

8. 8 windows; some open, some not.

9. 10 stories; some are about animals.



Write the other part of the number

10. 9, if one part is 6.

11. 8, if one part is 6.

12. 10, if one part is 7.

13. 10, if one part is 5.

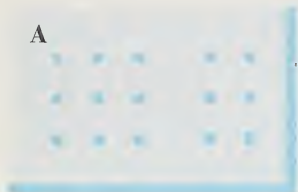
14. 9, if one part is 7.

Add by Making a 10-Group

Facts with sums 11 to 18 [O]

1. How many apples are 9 apples and 6 apples?

A



The groups of dots in box A stand for the groups of 9 apples and 6 apples.

B



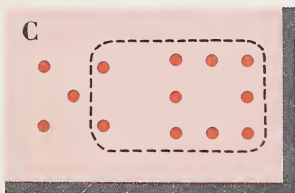
The work in box B shows how to find the sum of 9 and 6 by first **making a 10-group**.

A line is drawn around the larger group, 9 dots, and 1 more from the smaller group to make 10. There are 5 dots left over.

$10 + 5 = 15$, so $9 + 6 = ?$ Do you see why?

2. How many are 5 and 8? Study the work in box C

C



to see how the sum is found by making a 10-group.

The line is drawn around the larger group, 8 dots, and around how many of the 5 dots?

$3 + 10 = 13$, so $5 + 8 = ?$ Tell how we made a 10.

3. Box D shows that $7 + 4 = 11$. Tell how the sum is found by making a 10.

D



E



4. Tell the sum of 5 and 9 by making a 10. Use box E.

5. Copy box F and find the sum of 4 and 8.



6. Copy box G and find the sum of 9 and 7.

Copy Ex. 7 to 18. Find the sums by making a 10. Make dot pictures as in boxes F and G.

- | | | | |
|-------------|-------------|---------|---------|
| 7. $9 + 3$ | 11. $9 + 7$ | 15. 9 | 17. 6 |
| 8. $8 + 6$ | 12. $7 + 8$ | $+5$ | $+9$ |
| 9. $7 + 9$ | 13. $8 + 4$ | 16. 8 | 18. 5 |
| 10. $6 + 8$ | 14. $6 + 7$ | $+7$ | $+8$ |

When the sum of any two 1-place numbers is more than 10, find the sum by making a 10-group and then adding the ones which are left.

[O]

Say the sums for Ex. 7 to 18. For Ex. 7, look at $9 + 3$. Think, “ $10 + 2$ ” and say, “12.”

Oral Practice

For oral work, we say answers. Do this for Ex. 1 to 3.



















Turn to page 62. Say the sums for the examples in rows 3 to 7.

In these numbers, tell what figures are in ten's place: 82, 73, 26, 45, 19.

Bells to Show the Facts for 11

[O]

| | | | |
|---|---|---|---------|
| A |  |  | 2 and 9 |
| B |  |  | 3 and 8 |
| C |  |  | 4 and 7 |
| D |  |  | 5 and 6 |
| E |  |  | 6 and 5 |
| F |  |  | 7 and 4 |
| G |  |  | 8 and 3 |
| H |  |  | 9 and 2 |

1. How many bells in each row? Count them.

2. Do you see 2 bells in the first part of row A? How many in the second part? $2 + 9 = 11$

3. How many in each part of row H? $9 + 2 = 11$

4. Then in rows A and H, $2 + 9 = 11$, $9 + 2 = 11$, $11 - 2 = 9$, and $11 - 9 = 2$. This is the whole story about 2, 9, and 11. Tell it by saying a number for **n** below.
 $2 + \mathbf{n} = 11$ $9 + \mathbf{n} = 11$ $11 - \mathbf{n} = 9$ $11 - \mathbf{n} = 2$

5 to 7. What whole story is shown in rows B and G? in rows C and F? in rows D and E?

What 2 rows give the answer to each example below?

| | | | | | |
|-----------|-----------|-----------|-----------|-----------|-----------|
| 8. 11 | 9. 7 | 10. 11 | 11. 3 | 12. 6 | 13. 11 |
| <u>-3</u> | <u>+4</u> | <u>-5</u> | <u>+8</u> | <u>+5</u> | <u>-4</u> |

[W]

14. Copy the parts of 11 and write the sums.

Copy and finish. Write the number for **n**. Use the rows of bells if you need to.

- | | | |
|------------------|------------------|---------------------|
| 15. $3 + n = 11$ | 20. $11 - n = 5$ | 25. $11 - n = 8$ |
| 16. $11 - n = 9$ | 21. $2 + n = 11$ | 26. 7 and $n = 11$ |
| 17. $5 + n = 11$ | 22. $4 + 7 = n$ | 27. $n + 5 = 11$ |
| 18. $11 - 8 = n$ | 23. $8 + n = 11$ | 28. $n - 7 = 4$ |
| 19. $n + 2 = 11$ | 24. $11 - n = 7$ | 29. 5 from $11 = n$ |

30. Make a list of the 8 addition facts that have 11 as the sum. The first three are done for you.

- | |
|-----------------|
| a. $2 + 9 = 11$ |
| b. $3 + 8 = 11$ |
| c. $4 + 7 = 11$ |

31. Write the 8 subtraction facts that begin with 11. The first three are done for you.

- | |
|-----------------|
| a. $11 - 2 = 9$ |
| b. $11 - 3 = 8$ |
| c. $11 - 4 = 7$ |

Writing down the addition and the subtraction facts for 11 will help you to learn them.

Use the facts for 11 to work Ex. 32 to 39.

32. Wednesday morning Tom had 3¢. He earned 8¢ that day. Then Wednesday night he had $- ? - \text{¢}$.

33. Rusty gave 9 of his 11 peanuts to an elephant and saved $- ? -$ peanuts for himself.

- | | | | |
|---------------------|---------------------|-----------|------------|
| 34. $6 + 3 + 2 = ?$ | 36. $4 + 3 + 4 = ?$ | 38. 1 | 39. 5¢ |
| 35. $3 + 5 + 3 = ?$ | 37. $2 + 4 + 5 = ?$ | 3 | 3¢ |
| | | <u>+7</u> | <u>+3¢</u> |

40. For Ex. 34, change the numbers around three different ways. Show that this does not change the sum.

Up One or Down One!

Help for hard facts [O]

If you do not know the sum of an addition fact, you can often find it by using another addition fact you do know and going “up 1.”

A

$$\begin{array}{r} 5 \\ +3 \\ \hline ? \end{array}$$

1. If you cannot finish Ex. A, you can use $4+3=7$, or $5+2=7$. Then the sum for $5+3$ will be “up 1,” or 8. Why?

B

$$\begin{array}{r} 3 \\ +8 \\ \hline ? \end{array}$$

2. For Ex. B, you can use $2+8=10$ or $3+7=10$. Then the sum of $3+8$ will be “up 1,” or $-?-$. Why?

Tell facts to use in finding these sums:

| | a | b | c | d | e | f | g | h |
|----|------|------|------|------|------|------|------|------|
| 3. | 4 | 5 | 2 | 8 | 7 | 9 | 6 | 7 |
| | $+7$ | $+6$ | $+8$ | $+3$ | $+4$ | $+2$ | $+5$ | $+2$ |

C

$$\begin{array}{r} 2 \\ +4 \\ \hline ? \end{array}$$

Sometimes it is easier to find sums by going “down 1” from an addition fact you know.

4. For Ex. C, you can use $3+4=7$ or $2+5=7$. Then the sum of $2+4$ will be “down 1,” or 6. Why?

D

$$\begin{array}{r} 5 \\ +4 \\ \hline ? \end{array}$$

5. For Ex. D, you can use $5+5=10$ or $6+4=10$. Then the sum of $5+4$ will be “down 1,” or $-?-$. Why?

Tell facts for finding these sums by going “down 1”:

| | | | | | | | | |
|----|------|------|------|------|------|------|------|------|
| 6. | 6 | 7 | 8 | 4 | 3 | 4 | 2 | 3 |
| | $+4$ | $+3$ | $+2$ | $+6$ | $+7$ | $+5$ | $+9$ | $+5$ |

When to Subtract

Help in problem-solving [W]

You subtract when you have to find

- a. how many left;**
- b. how many gone;**
- c. the other part of a number.**

Write your work for these problems:

1. Eight boys were in a large wagon. When 6 boys got out, how many were left in the wagon?
2. Sue has to work 11 problems. She has done 3 of them. How many has she to do?
3. Tom spelled 14 words. He missed 4 words. How many of the words did he spell right?
4. Four of our 10 oranges are large and the rest are small. How many small oranges have we?
5. Sam got 18¢ for doing two jobs. If he got 8¢ for one job, what did he get for the other?
6. Joe had 11 hens. One morning only 5 hens were in the hen house. How many hens had got away?
7. We cut 6 inches off a board 16 inches long. How much of the long board did that leave?
8. The picture shows ? animals. ? are painted. How many more are there to paint?

Tell why you subtracted in each problem.

[O]





Finding Like-Names for Groups

Help in problem-solving [O]

You can put together and take apart groups only if the things are alike in some way.

The picture shows $_{-?}$ horses and $_{-?}$ lions. In all, there are 6 what?

The horses and lions are alike if you think of them as animals. The picture shows 4 animals and $_{-?}$ animals.

$$4 \text{ animals} + 2 \text{ animals} = 6 \text{ animals.}$$

$$6 \text{ animals} - 4 \text{ animals} = 2 \text{ animals.}$$

In Ex. 1 to 3, change the names for the groups, so you can put together or take apart groups which are alike.

1. 6 boys and 2 girls
2. 7 cats and 3 dogs
3. 5 potatoes and 4 carrots

In Ex. 4 to 7 think of names for the groups and tell the addition stories. An addition story for Ex. 4 is

$$6 \text{ toys} + 3 \text{ toys} = 9 \text{ toys.}$$

4. Joe has 6 games and 3 tops.
5. On a fence there were 4 crows and 6 robins.
6. At a party were 4 boys and 5 girls.
7. On the farm are 4 horses and 3 cows.

Make subtraction stories for Ex. 8 to 12 after giving the groups like-names. The story for Ex. 8 is

$$11 \text{ people} - 4 \text{ people} = 7 \text{ people.}$$

8. Eleven people went together to the circus. Four of them were men.

9. Ten children are playing a game. Three of them are boys.

10. Ten flowers are in a bowl. Six of them are roses.

11. I saw eleven buildings. Three of them were barns.

12. Tuesday morning Margaret had a dime. After lunch on Tuesday she had a nickel left.

When numbers stand for groups of things which are alike in some way, they are called like-numbers. Only like-numbers can be added or subtracted.

Making a 10

[W]

Copy these examples and write the sums. If you need to do so, use dot pictures and make a ten as on page 68.

| | a | b | c | d | e | f | g | h | i |
|----|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|
| 1. | 9 | 5 | 8 | 7 | 8 | 3 | 4 | 2 | 8¢ |
| | <u>+9</u> | <u>+7</u> | <u>+3</u> | <u>+6</u> | <u>+5</u> | <u>+9</u> | <u>+8</u> | <u>+9</u> | <u>+8¢</u> |
| 2. | 7 | 4 | 7 | 9 | 6 | 8 | 9 | 7 | 6¢ |
| | <u>+5</u> | <u>+7</u> | <u>+7</u> | <u>+8</u> | <u>+8</u> | <u>+7</u> | <u>+4</u> | <u>+9</u> | <u>+9¢</u> |

(seventy-five) 75




Working in the Number Corner

Higher-decade S.; no borrowing [O]

1. Before Joe took 4 rings, there were 10 on the first stick, 10 on the second, and 9 on the third, or 29 in all. Tell ways to find how many rings are left on the sticks.

2. You can count the tens and ones in the picture to find how many are left. Do this.

3. You can use the -picture in box A. Tell how.

| | | |
|--|---|---|
| <p>A</p>  | <p>B</p> $ \begin{array}{r} 2 \text{ tens and } 9 \text{ ones} \\ - \quad \quad \quad 4 \text{ ones} \\ \hline 2 \text{ tens and } 5 \text{ ones,} \\ \text{or } 25 \end{array} $ | <p>C</p> $ \begin{array}{r} 29 \\ - 4 \\ \hline 25 \end{array} $ |
|--|---|---|

4. You can use tens and ones. In box B, 9 ones take away 4 ones leaves 5 ones. How many tens are left?

5. You can subtract with figures. To subtract in box C, **first look at the ones**, 9 and 4, and *think*, “5.” Write “-?-” in one’s place. **Then look at the 2 tens** and write down “-?-”. Why?

6. One day there were two sticks with 10 rings on one and 8 on the other, or 18 in all. Miss Wells covered 7 rings. How many rings could then be seen?

7. You can find the answer in box D. Cover 7 ones.

8. How do you finish Ex. E?

9. Tell how to subtract in F.



| D | E | F |
|---|--|--|
| | $\begin{array}{r} 1 \text{ ten and } 8 \text{ ones} \\ - \quad \quad \quad 7 \text{ ones} \\ \hline ? \text{ and } ? , \\ \text{or } ?- \end{array}$ | $\begin{array}{r} 18 \\ - 7 \\ \hline ? \end{array}$ |

10. Use the -picture in box G to find the answer for $37 - 5$.

11. Find $37 - 5 = ?$ by finishing box H.

12. Tell how to subtract in box I.

| G | H | I |
|---|---|--|
| | $\begin{array}{r} 3 \text{ } _{-} ? _{-} \text{ and } _{-} ? _{-} \text{ ones} \\ - \quad \quad \quad 5 \text{ } _{-} ? _{-} \\ \hline ? \text{ and } ? , \\ \text{or } ?- \end{array}$ | $\begin{array}{r} 37 \\ - 5 \\ \hline ? \end{array}$ |

13. Which way is shortest—box G, H, or I?

[W]

Copy and finish Ex. 14 to 17 in the three ways.

14. $14 - 3$ 15. $26 - 5$ 16. $49 - 6$ 17. $37 - 4$

(seventy-seven) **77**

Subtraction Families

Higher-decade S.; no borrowing [O]

Besides the addition families, there are subtraction families, as in boxes A and B.

1. In box A, what is taken from 8 each time?

2. To take 5 from 18 *think*,

5 from 8 is 3, so 5 from 18 is 13.

What is the ten's figure in 18? in 13?

| | | | | |
|-----------|-----------|-----------|-----------|--|
| A | | | | |
| 18 | 28 | 38 | 48 | |
| <u>-5</u> | <u>-5</u> | <u>-5</u> | <u>-5</u> | |
| B | | | | |
| 29 | 39 | 19 | 89 | |
| <u>-3</u> | <u>-3</u> | <u>-3</u> | <u>-3</u> | |

3. To take 5 from 28 *think*,

5 from 8 is 3,

so 5 from 28 is _?_.

4. Tell how to think to find the answers for $38 - 5$ and for $48 - 5$.

5. The examples in box A are part of the $8 - 5$ family. Say two more examples in this family.

6. In box B, what is subtracted from 9 each time?

7. These examples are part of the $9 - 3$ family. Say two other examples in the same family.

8. To take 3 from 29 *think*,

3 from 9 is 6, so 3 from 29 is _?_.

9. Find and say all the remainders in box B.

10. Ex. a to d below are parts of what families?

a. $37 - 3$

b. $28 - 6$

c. $45 - 4$

d. $56 - 3$

11. Tell how to find remainders for Ex. 10 a to d.

12. Write three examples that are parts of

- a. the $8 - 3$ family; b. the $7 - 6$ family.

Why is $23 - 2$ part of the $3 - 2$ subtraction family?

Ex. 13 is part of what family? Ex. 14? Ex. 15? Ex. 16?

13. $53 - 2$ 14. $39 - 3$ 15. $46 - 2$ 16. $75 - 3$

Copy and write remainders for these examples. For Ex. 17a *think*, “7 less 2 is 5, so 37 less 2 is 35.”

| | a | b | c | d | e | f | g | h |
|-----|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|
| 17. | 37 | 58 | 66 | 67 | 19 | 49 | 28 | 65¢ |
| | <u>-2</u> | <u>-4</u> | <u>-4</u> | <u>-3</u> | <u>-2</u> | <u>-2</u> | <u>-4</u> | <u>-2¢</u> |
| 18. | 38 | 79 | 49 | 42 | 44 | 37 | 19 | 57¢ |
| | <u>-2</u> | <u>-6</u> | <u>-7</u> | <u>-1</u> | <u>-2</u> | <u>-5</u> | <u>-8</u> | <u>-4¢</u> |
| 19. | 55 | 16 | 48 | 19 | 96 | 68 | 18 | 52¢ |
| | <u>-3</u> | <u>-2</u> | <u>-3</u> | <u>-6</u> | <u>-5</u> | <u>-6</u> | <u>-6</u> | <u>-1¢</u> |
| 20. | 36 | 59 | 88 | 69 | 56 | 23 | 97 | 48¢ |
| | <u>-2</u> | <u>-3</u> | <u>-2</u> | <u>-4</u> | <u>-3</u> | <u>-2</u> | <u>-2</u> | <u>-5¢</u> |

21. The ribbon that Mrs. Cox wanted cost 48¢ at one store and 6¢ less at another store. How much did it cost at the second store?

22. Mrs. Smith bought 15 yards of ribbon and used 3 yards on a hat. How many yards were left?

23. One part of 38 is 5. What is the other part?

Do not copy. Just write answers for these:

24. $46 - 3 = ?$ 25. $89 - 8 = ?$ 26. $74 - 2 = ?$

27. Draw ϕ -pictures for Ex. 21 and 22.



A Quicker Way to Subtract

S. families; no borrowing [O]

1. Tom and his father together filled 18 baskets of apples. Tom filled 6 baskets, so his father filled how many? $18 - 6 = ?$

For $18 - 6 = ?$ you can *think*,

8 take away 6 is 2, so 18 take away 6 is -?..

It is quicker just to **look** at $18 - 6$ **and think**, "12."
Why can you do this?

Find remainders the quick way for Ex. 2 to 6.

| | | | | |
|-----------|-----------|-----------|-----------|------------|
| 2. 28 | 3. 29 | 4. 46 | 5. 74 | 6. 37¢ |
| <u>-6</u> | <u>-2</u> | <u>-3</u> | <u>-2</u> | <u>-5¢</u> |

[W]

Use folded paper. Work the new, quick way.

| | a | b | c | d | e | f | g | h |
|----|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|
| 7. | 98 | 69 | 75 | 56 | 37 | 46 | 17 | 19¢ |
| | <u>-3</u> | <u>-6</u> | <u>-2</u> | <u>-2</u> | <u>-4</u> | <u>-3</u> | <u>-5</u> | <u>-5¢</u> |
| 8. | 45 | 76 | 24 | 57 | 63 | 39 | 36 | 37¢ |
| | <u>-3</u> | <u>-5</u> | <u>-2</u> | <u>-6</u> | <u>-2</u> | <u>-4</u> | <u>-4</u> | <u>-4¢</u> |

► **Extra Practice.** Work Sets 13 and 14.

Adding and Subtracting

[W]

Write answers on folded paper. Watch the signs!

| | a | b | c | d | e | f | g | h |
|----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------|-------------------|
| 1. | 3 <u>+65</u> | 79 <u>-6</u> | 45 <u>+4</u> | 17 <u>-6</u> | 19 <u>-9</u> | 6 <u>+32</u> | 58¢ <u>-6¢</u> | 89¢ <u>-7¢</u> |
| 2. | 84 <u>-3</u> | 4 <u>+33</u> | 28 <u>-5</u> | 49 <u>-5</u> | 50 <u>+9</u> | 75 <u>-3</u> | 45¢ <u>+3¢</u> | 38¢ <u>-3¢</u> |
| 3. | 19 <u>-3</u> | 3 <u>+26</u> | 17 <u>-5</u> | 46 <u>-4</u> | 32 <u>+7</u> | 18 <u>-2</u> | 17¢ <u>-7¢</u> | 59¢ <u>-2¢</u> |
| 4. | 17 <u>-4</u> | 5 <u>+82</u> | 69 <u>-4</u> | 12 <u>+3</u> | 3 <u>+6</u> | 43 <u>+2</u> | 1¢ <u>+7¢</u> | 4¢ <u>+5¢</u> |

What Is **n**? No Pencils, Please!

[O]

First say the facts by rows. Then say the facts in column a; in column b; in column c.

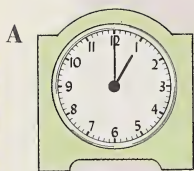
| | a | b | c |
|----|----------------|---------------|----------------------|
| 1. | $n - 9 = 2$ | $n - 8 = 2$ | $3 + n = 11$ |
| 2. | $5 + n = 11$ | $11 - 4 = n$ | $5 + 3 = n$ |
| 3. | $11 - n = 8$ | $n + 2 = 11$ | 11 take away $n = 3$ |
| 4. | n and 4 = 11 | 5 and $n = 9$ | $n - 2 = 9$ |
| 5. | $2 + 9 = n$ | $11 - n = 4$ | 10 take away $n = 3$ |
| 6. | 6 and $n = 11$ | $n + 6 = 10$ | $11 - 5 = n$ |

Just say the answers for these examples:

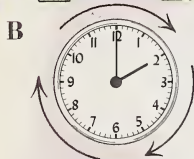
7. $2 + 3 + 5 = ?$ 8. $12 + 3 + 3 = ?$ 9. $49 - 6 = ?$

How Do We Tell Time?

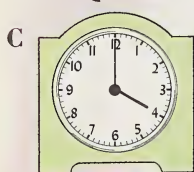
[O]



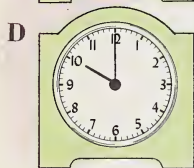
1. Clock A shows it is now 1 o'clock. At 1 o'clock, where does the short hand point? Where does the long hand point?



2. Ann's birthday party will begin at 2 o'clock. At that time, where will the short hand point? Will the long hand again point to 12?



3. On clock B, the arrows show the way the hands move. Move your finger around clock C the way the arrows go. Then move it around D.



4. Tell the time on clock B. Where does the short hand point? Why is the short hand called the **hour hand**?

5. The long hand on the clock is called the **minute hand**. How far around the clock does it move in one hour?

6. Tell the time on clock C; on clock D.

Where will the long hand and the short hand be when the time is

7. 6 o'clock?

9. 11 o'clock?

11. 7 o'clock?

8. 8 o'clock?

10. 9 o'clock?

12. 3 o'clock?

The short hand shows the hour.

The long hand is the minute hand. It moves from 12, minute by minute, around to 12 again.

When the minute hand reaches 6, it has moved half way around the clock. So we say the time is **half past** an hour.

13. Clock E shows half past what hour?

14. Tell the time on clock F. Where is the long hand? The short hand has moved past _?_.

15. Tell about the time and the hands on clock G; on clock H.

Where will the long hand and the short hand be when the time is

16. half past 2?

18. half past 11?

17. half past 6?

19. half past 3?

On clock I, the long hand has moved a quarter, or one fourth, of the way around the clock. The time is **quarter past** 8.

20. Tell about the time and the hands on clock J; on clock K.

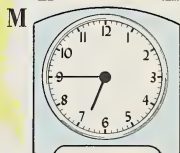
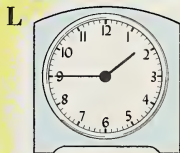
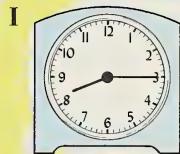
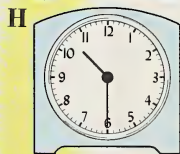
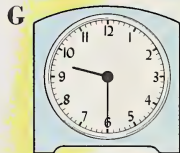
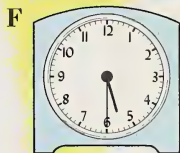
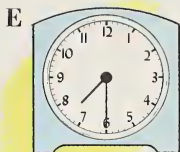
Look at clock L. This clock shows **quarter before** 2. The hour hand is just before _?_. What does quarter before mean?

21. Tell about the time on clock M.

In one day, the hour hand goes around the clock _?_ times.

12 hours and 12 hours = _?_ hours.

24 hours (hr.) = 1 day (da.)



Your Ruler Shows Parts of 12

[O]

The edge of your ruler is a line. It has 12 spaces, called "inches." 12 inches = 1 foot.

The line at the left has 12 spaces, too. Use this line or your ruler to find the parts of 12.

For Ex. 1, put your finger at the end of 9 spaces and then count along the edge (to the right) the spaces needed to get to the end of 12. How many?

12 spaces = 9 spaces + 3 spaces, or $12 = 9 + 3$.

Work Ex. 2 to 7 the same way.

1. $12 = 9 + _? _$

4. $12 = 6 + _? _$

2. $12 = 8 + _? _$

5. $12 = 5 + _? _$

3. $12 = 7 + _? _$

6. $12 = 4 + _? _$

7. $12 = 3 + _? _$

8. On your ruler or on the line at the left, show that $12 - 4 = 8$. Count 4 down (to the left) from 12.

9. Count to find $12 - 5$; $12 - 3$; $12 - 6$.

[W]

Copy and finish the examples in rows 10 and 11. Use a ruler or the line, if you need to.

| | a | b | c | d | e | f | g |
|-----|-----------------|-----------------|-----------------|----------------|-----------------|----------------|-----------------|
| 10. | 5 | 12 | 8 | 12 | n | 12 | 6 |
| | $\frac{+n}{12}$ | $\frac{-3}{n}$ | $\frac{+n}{12}$ | $\frac{-7}{n}$ | $\frac{+9}{12}$ | $\frac{-4}{n}$ | $\frac{+n}{12}$ |
| 11. | 12 | n | n | 12 | 9 | 12 | 12 |
| | $\frac{-9}{n}$ | $\frac{+5}{12}$ | $\frac{+8}{12}$ | $\frac{-5}{n}$ | $\frac{+n}{12}$ | $\frac{-6}{n}$ | $\frac{-8}{n}$ |



The Facts for 12

[O]

1. The picture shows the fact, $6 + 6 = 12$. Cover one group of ducks and finish the fact, $12 - 6 = ?$

$6 + 6 = 12$ and $12 - 6 = 6$ are doubles.

2. Finish the facts: a. $6 + 6 = n$; b. $12 - 6 = n$.

How many facts are there in the whole story about 6, 6, and 12?

[W]

3. Copy $7 + 5 = 12$ and write the whole story.

4. Copy $12 - 3 = 9$ and write the whole story.

5. Copy $8 + 4 = 12$ and write the whole story.

6. Write the other part of 12: a. if 8 is one part; b. if 5 is one part; c. if 3 is one part.

7. Seven addition facts have sums of 12. Write them. Beside each fact, show the sum with dots by making a 10.

8. Seven subtraction facts start with 12. Write them.

Write these facts for 12 to help you learn them:

| | | | | | | |
|--|--|--|--|--|--|--|
| 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| $\begin{array}{r} +9 \\ \hline 12 \end{array}$ | $\begin{array}{r} +8 \\ \hline 12 \end{array}$ | $\begin{array}{r} +7 \\ \hline 12 \end{array}$ | $\begin{array}{r} +6 \\ \hline 12 \end{array}$ | $\begin{array}{r} +5 \\ \hline 12 \end{array}$ | $\begin{array}{r} +4 \\ \hline 12 \end{array}$ | $\begin{array}{r} +3 \\ \hline 12 \end{array}$ |
| 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| $\begin{array}{r} -3 \\ \hline 9 \end{array}$ | $\begin{array}{r} -4 \\ \hline 8 \end{array}$ | $\begin{array}{r} -5 \\ \hline 7 \end{array}$ | $\begin{array}{r} -6 \\ \hline 6 \end{array}$ | $\begin{array}{r} -7 \\ \hline 5 \end{array}$ | $\begin{array}{r} -8 \\ \hline 4 \end{array}$ | $\begin{array}{r} -9 \\ \hline 3 \end{array}$ |

Oral Practice

Say the answers by rows, then by columns.

| | a | b | c | d | e | f | g | h |
|----|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|
| 1. | 12 | 5 | 9 | 11 | 4 | 7 | 8 | 12¢ |
| | <u>-4</u> | <u>+6</u> | <u>+3</u> | <u>-6</u> | <u>+8</u> | <u>+4</u> | <u>+4</u> | <u>-6¢</u> |
| 2. | 4 | 11 | 7 | 12 | 11 | 5 | 11 | 12¢ |
| | <u>+6</u> | <u>-3</u> | <u>+5</u> | <u>-3</u> | <u>-7</u> | <u>+7</u> | <u>-9</u> | <u>-8¢</u> |
| 3. | 3 | 12 | 11 | 6 | 10 | 11 | 3 | 10¢ |
| | <u>+9</u> | <u>-7</u> | <u>-8</u> | <u>+5</u> | <u>-6</u> | <u>-4</u> | <u>+8</u> | <u>-8¢</u> |
| 4. | 11 | 10 | 8 | 12 | 6 | 12 | 2 | 11¢ |
| | <u>-2</u> | <u>-7</u> | <u>+3</u> | <u>-9</u> | <u>+6</u> | <u>-5</u> | <u>+9</u> | <u>-5¢</u> |

Say the answers for Ex. 5 to 16.

5. $5 + 3 + 3 = ?$ 6. $2 + 2 + 7 = ?$ 7. $4 + 2 + 6 = ?$

8. $2 + 6 + 4 = ?$ 9. $2 + 7 + 3 = ?$ 10. $5 + 4 + 2 = ?$

| | | | | | |
|-----------|-----------|-----------|-----------|------------|------------|
| 11. 1 | 12. 3 | 13. 2 | 14. 6 | 15. 3¢ | 16. 1¢ |
| 4 | 5 | 4 | 1 | 2¢ | 3¢ |
| <u>+7</u> | <u>+2</u> | <u>+5</u> | <u>+5</u> | <u>+5¢</u> | <u>+8¢</u> |

17. $4 + 3 + 4 = 11$, so $3 + 4 + 4 = ?$ Why?

18. $8 + 2 = 10$, so $8 + 3 = 11$. Why?

The sign **+** is called the **plus sign**. For $4 + 2$ we can say "4 and 2" or "4 plus 2."

The sign **-** is called the **minus sign**. For $8 - 2$, we can say "8 less 2" or "8 minus 2."

Now read rows 1 to 4, using "plus" and "minus" for **+** and **-**. Say the answers.

Do You Know?

Progress Test 7 [W]

Write answers on folded paper.

| | a | b | c | d | e | f | g | h |
|----|-------------------|------------------|------------------|-------------------|------------------|-------------------|-------------------|--------------------|
| 1. | 19 | 10 | 72 | 79 | 37 | 2 | 68¢ | 5¢ |
| | $\underline{-5}$ | $\underline{+8}$ | $\underline{+6}$ | $\underline{-8}$ | $\underline{-5}$ | $\underline{+25}$ | $\underline{-6¢}$ | $\underline{+53¢}$ |
| 2. | 3 | 38 | 17 | 2 | 89 | 18 | 59¢ | 75¢ |
| | $\underline{+84}$ | $\underline{-6}$ | $\underline{-7}$ | $\underline{+27}$ | $\underline{-4}$ | $\underline{-3}$ | $\underline{-6¢}$ | $\underline{+4¢}$ |
| 3. | 29 | 78 | 39 | 3 | 49 | 5 | 58¢ | 47¢ |
| | $\underline{-3}$ | $\underline{-5}$ | $\underline{-7}$ | $\underline{+86}$ | $\underline{-5}$ | $\underline{+92}$ | $\underline{-7¢}$ | $\underline{-4¢}$ |

► **Extra Practice.** Work Extra Practice Set 15.

Problems about Pictures

[W]

Write addition problems for Ex. 1 to 5. Then find the answer for each of the problems.

| | | | |
|----|---|---|---|
| 1. |  |  | ? |
| 2. |  |  | ? |
| 3. |  |  | ? |
| 4. |  |  | ? |
| 5. |  |  | ? |

Mary's

Joan's



Add or Subtract?

A. and S. problems [W]

Write the work for problems 1 to 7.

1. On Thursday, Mary bought candy that cost 3¢ , 5¢ , and 4¢ . What did all the candy cost?
2. The next Thursday, Mary bought candy that cost 3¢ , 6¢ , and 2¢ . How much did she have to pay?
3. Susan bought 3 tablets. Then there were 21 tablets left. How many were there at first?
4. Dolls that were sold for 89¢ were put on sale at 5¢ less. How much did they sell for then?
5. Ninety-six dolls were put on sale. After the sale, 3 were left. How many had been sold?
6. Joe gave 25¢ to pay for a book costing 4¢ . How much change did he get back?
7. On a table were 36 bottles of paint. Four bottles had red paint. The rest had blue paint. How many bottles of blue paint were on the table?

[O]

Tell why you added or subtracted in problems 1 to 7.

Do You Know?

Progress Test 8 [W]

Write answers on folded paper.

| | a | b | c | d | e | f | g | h | i |
|----|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|
| 1. | 11 | 4 | 3 | 10 | 12 | 9 | 7¢ | 8¢ | 11¢ |
| | <u>-3</u> | <u>+7</u> | <u>+9</u> | <u>-8</u> | <u>-5</u> | <u>-4</u> | <u>+5¢</u> | <u>+3¢</u> | <u>-5¢</u> |
| 2. | 7 | 12 | 8 | 3 | 11 | 6 | 9¢ | 7¢ | 5¢ |
| | <u>+2</u> | <u>-8</u> | <u>+2</u> | <u>+8</u> | <u>-7</u> | <u>+5</u> | <u>+3¢</u> | <u>+4¢</u> | <u>+6¢</u> |
| 3. | 12 | 10 | 5 | 11 | 6 | 12 | 8¢ | 10¢ | 12¢ |
| | <u>-6</u> | <u>-7</u> | <u>+7</u> | <u>-6</u> | <u>+4</u> | <u>-9</u> | <u>+4¢</u> | <u>-6¢</u> | <u>-4¢</u> |
| 4. | 12 | 11 | 4 | 11 | 12 | 11 | 2¢ | 10¢ | 11¢ |
| | <u>-3</u> | <u>-2</u> | <u>+8</u> | <u>-9</u> | <u>-7</u> | <u>-4</u> | <u>+9¢</u> | <u>-4¢</u> | <u>-8¢</u> |

Write answers only for Ex. 5 to 14.


| | | | | |
|--------------------|-----------|-----------|-----------|-----------|
| 5. $1 + 3 + 7 = ?$ | 8. 1 | 9. 22 | 10. 33 | 11. 3 |
| 6. $2 + 1 + 9 = ?$ | 2 | 3 | 5 | 1 |
| 7. $4 + 3 + 4 = ?$ | <u>+4</u> | <u>+3</u> | <u>+1</u> | <u>+5</u> |

12. In the number 19, what does the 1 stand for?

13. Do you add or subtract to find how many gone?

14. How many facts are in the whole story about

a. 6, 6, and 12? b. 3, 8, and 11? c. 4, 6, and 10?

Write numbers for these -pictures:

| | | |
|---|---|---|
| 15.  | 16.  | 17.  |
|---|---|---|

► **Extra Practice.** Work Set 16.

Can You Work Problems?

Problem Test 2

Write the work for Ex. 1 to 8.

1. To make a boat, Joe, Bill, and Jack are using 3 big boxes and 8 small boxes, or how many boxes in all?

2. They made a sail from 6 red pieces of cloth, 1 blue piece, and 4 white pieces. They used how many pieces of cloth?

3. Joe and Bill together sawed 18 boards. Bill sawed 6 boards. Joe sawed how many boards?

4. Bill brought 8 long nails. Jack brought 21. That made how many long nails in all?

5. For rope, Jack spent all but 3¢ of his 36¢. Jack spent how much for rope?

6. They cut the rope into 12 pieces. How many pieces did they use if there were 3 pieces left?

7. The picture shows the stars Bill painted. To have 12 stars, how many stars must Joe paint?

8. The boys have 4 boxes to sit on. If they want 7 boxes in all, they need how many more boxes?



Do You Understand?

Test of Information and Meaning 2

Copy the number from box A that

1. means "thirty-six."
2. has 9 in ten's place.
3. has 4 in one's place.
4. has only 1 ten.
5. means "8 tens."

A

| | | | | |
|----|----|----|----|----|
| 49 | 15 | 36 | 79 | 80 |
| 93 | 64 | 51 | 38 | 32 |

B

| | | | | |
|----|----|----|----|----|
| 26 | 14 | 49 | 50 | 5 |
| +3 | -7 | -4 | +7 | +4 |
| ? | ? | ? | ? | ? |

Copy the example from box B that

6. has a sum of 9.
7. has a two-place remainder.
8. has only two facts in its whole story.
9. is in the $9 - 4$ family.

Write the time shown on

10. clock C. 12. clock E.
11. clock D. 13. clock F.

14. Draw a clock to show quarter past 11.

15. Are the sums for Ex. a to c all alike?

a. $4 + 3 + 5$

b. $5 + 3 + 4$

c. $3 + 5 + 4$

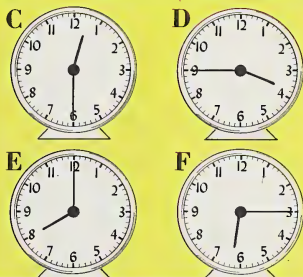
Write the number that has

16. 5 tens and 2 ones.
17. 3 tens and 9 ones.

18. 1 one and 7 tens.

19. 5 ones and 4 tens.

(ninety-one) **91**



Do You Make Mistakes?

Diagnostic Test 2

Write answers on folded paper.

| | a | b | c | d | e | Study Pages | Practice Sets |
|----|----------------------|----------------------|----------------------|----------------------|-------------------------|----------------|---------------|
| 1. | 4 <u>+7</u> | 12 <u>-7</u> | 11 <u>-6</u> | 8 <u>+4</u> | 11¢ <u>-8¢</u> | | |
| 2. | 12 <u>-9</u> | 11 <u>-7</u> | 6 <u>+5</u> | 11 <u>-9</u> | 3¢ <u>+9¢</u> | 70-71 84-85 | 16 |
| 3. | 11 3 <u>+2</u> | 52 4 <u>+2</u> | 42 5 <u>+2</u> | 23 1 <u>+4</u> | 61¢ 4¢ <u>+3¢</u> | 63 | 11, 12 |
| 4. | 43 <u>+6</u> | 7 <u>+72</u> | 35 <u>+3</u> | 52 <u>+7</u> | 5¢ <u>+12¢</u> | 58-62 | 9, 10, 15 |
| 5. | 38 <u>-6</u> | 46 <u>-5</u> | 75 <u>-3</u> | 99 <u>-2</u> | 57¢ <u>-4¢</u> | 76-80 | 13, 14, 15 |

If you made mistakes in any row, find and read the Study Pages after that row. Then work the Practice Sets for that row.

Oral Practice

See how quickly you can give answers for Ex. 1 to 9.

1. $4 + 8 = ?$
2. $9 - 2 = ?$
3. $7 + 3 = ?$
4. $15 + 4 = ?$
5. $26 - 3 = ?$
6. $43 - 1 = ?$
7. $57 + 1 + 1 = ?$
8. $14 + 4 + 1 = ?$
9. $42 + 3 + 3 = ?$

10. Say all the parts of 10.

How Well Can You Figure?

Computation Test 2

You will take a test like this one at the end of each chapter. You had one for Chapter 1.

From these tests you can see just how well you have learned what you have studied in each chapter.

Try to get the answers right. Don't hurry. It is better to have right answers than to finish quickly with wrong ones.

For Ex. 1 to 20, write answers on folded paper. See how many answers you can get right.

| | | | | |
|--|--|--|---|--|
| 1. $\begin{array}{r} 23 \\ +4 \\ \hline \end{array}$ | 2. $\begin{array}{r} 12 \\ -9 \\ \hline \end{array}$ | 3. $\begin{array}{r} 11 \\ -6 \\ \hline \end{array}$ | 4. $\begin{array}{r} 8\text{¢} \\ +3\text{¢} \\ \hline \end{array}$ | 5. $\begin{array}{r} 59\text{¢} \\ -6\text{¢} \\ \hline \end{array}$ |
|--|--|--|---|--|

| | | | | |
|--|--|--|--|---|
| 6. $\begin{array}{r} 11 \\ -7 \\ \hline \end{array}$ | 7. $\begin{array}{r} 71 \\ +6 \\ \hline \end{array}$ | 8. $\begin{array}{r} 45 \\ +2 \\ \hline \end{array}$ | 9. $\begin{array}{r} 37\text{¢} \\ -3\text{¢} \\ \hline \end{array}$ | 10. $\begin{array}{r} 10\text{¢} \\ +8\text{¢} \\ \hline \end{array}$ |
|--|--|--|--|---|

| | | | | |
|---|--|---|---|--|
| 11. $\begin{array}{r} 4 \\ 5 \\ +3 \\ \hline \end{array}$ | 12. $\begin{array}{r} 42 \\ 3 \\ +4 \\ \hline \end{array}$ | 13. $\begin{array}{r} 1 \\ 2 \\ +9 \\ \hline \end{array}$ | 14. $\begin{array}{r} 3\text{¢} \\ 5\text{¢} \\ +4\text{¢} \\ \hline \end{array}$ | 15. $\begin{array}{r} 24\text{¢} \\ 1\text{¢} \\ +3\text{¢} \\ \hline \end{array}$ |
|---|--|---|---|--|

| | | | | |
|---|--|---|---|--|
| 16. $\begin{array}{r} 5 \\ 2 \\ +4 \\ \hline \end{array}$ | 17. $\begin{array}{r} 32 \\ 2 \\ +5 \\ \hline \end{array}$ | 18. $\begin{array}{r} 3 \\ 4 \\ +5 \\ \hline \end{array}$ | 19. $\begin{array}{r} 2\text{¢} \\ 6\text{¢} \\ +2\text{¢} \\ \hline \end{array}$ | 20. $\begin{array}{r} 54\text{¢} \\ 3\text{¢} \\ +2\text{¢} \\ \hline \end{array}$ |
|---|--|---|---|--|

Copy Ex. 21 to 26 in columns and add.

| | | |
|---------------|---------------|---------------|
| 21. $3+2+7=?$ | 22. $4+2+5=?$ | 23. $2+5+3=?$ |
| 24. $1+3+8=?$ | 25. $2+4+4=?$ | 26. $3+6+2=?$ |



How Long Is a Foot?

Reference measures [O]

A ruler shows that 12 inches make a foot. With your hands, show how long you think a foot is.

1. With your ruler, measure your shoe, as Tom is doing in the picture. Is your shoe a foot long?

2. As Jean is doing in the picture, put your ruler on the back of your arm with one end at the tip of your big finger. At the other end of the ruler, lay a finger on your arm.

How far is a foot on your arm? Call this your **arm foot**. You will use your arm foot many times.

Find in your room the things in Ex. 3 to 6. Guess how wide each of the things is.

3. The teacher's desk

5. The room door

4. A window

6. Your desk

Now, first with your arm foot and then with your ruler, measure how wide the things in Ex. 3 to 6 are.

7. Measure your **finger inch**. Is it about an inch?

To find how long these things are, which would you measure with your finger inch? which with your arm foot? Tell why.



8. This book

10. A dog

9. A kitten

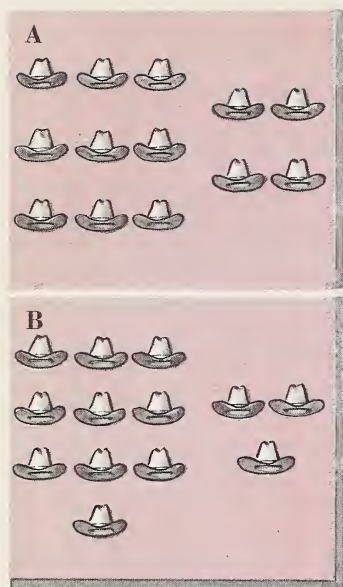
11. A pencil

12. A table

13. Make a black dot on your left arm where you think your arm foot ends. Test with your ruler.

Facts for 13

[O]



1. Box A is a picture of 9 hats and $9 + _?$ hats, or $9 + _?$.

2. In box B, the same hats have been changed to make groups of $10 + _?$. Boxes A and B show us that $9 + 4 = 10 + _?$.

3. $10 + 3 = 13$, so $9 + 4 = ?$

We have found the sum of $9 + 4$ by making a 10.

4. Find the sum of $4 + 9$.

5. Cover 4 hats in box B to find $13 - 4 = ?$ Now find $13 - 9 = ?$

6. Tell the whole story about 9, 4, and 13.

7. 8 dots + 5 dots, below, have been changed to show 10 and 3. $10 + 3 = 13$, so $8 + 5 = ?$ Find $13 - 8 = ?$



8. Use dots to find $5 + 8 = ?$ and $13 - 5 = ?$

9. Tell the whole story about 5, 8, and 13.

10. With dots, on the board find $7 + 6 = ?$ $6 + 7 = ?$

11. Cover dots to find $13 - 7 = ?$ $13 - 6 = ?$

12. Tell the whole story in A. and S. for 6, 7, and 13.

To find any fact with a sum over 10, you can first change the numbers so as to make the larger number a 10.

Write whole stories to help you learn these addition and subtraction facts for 13:

| | | | | | |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 4 | 5 | 6 | 7 | 8 | 9 |
| $\frac{+9}{13}$ | $\frac{+8}{13}$ | $\frac{+7}{13}$ | $\frac{+6}{13}$ | $\frac{+5}{13}$ | $\frac{+4}{13}$ |
| 13 | 13 | 13 | 13 | 13 | 13 |
| $\frac{-4}{9}$ | $\frac{-5}{8}$ | $\frac{-6}{7}$ | $\frac{-7}{6}$ | $\frac{-8}{5}$ | $\frac{-9}{4}$ |

Copy and write the sums or remainders.

13. $7 + 6$ 14. $8 + 5$ 15. $13 - 7$ 16. $9 + 4$
 17. $13 - 5$ 18. $5 + 8$ 19. $13 - 8$ 20. $4 + 9$
 21. $13 - 9$ 22. $13 - 4$ 23. $13 - 6$ 24. $6 + 7$

Facts for 14

[O]

1. $9 + 5 = ?$ 

Use the dot picture above and *think*, “ $10 + 4 = 14$, so $9 + 5 = ?$ ” Explain.

2. $5 + 9 = ?$ 

3. Cover dots to find $14 - 9 = ?$ to find $14 - 5 = ?$

On the board, use dot pictures and make a ten to help you finish the whole story for Ex. 4 and for Ex. 5.

4. $8 + 6 = ?$ $6 + 8 = ?$ $14 - 6 = ?$ $14 - 8 = ?$

5. $7 + 7 = ?$ $14 - 7 = ?$

6. Tell the whole story

for 5, 9, and 14; for 6, 8, and 14; for 7, 7, and 14.

Using the Facts for 13 and 14

[W]

Write whole stories to help you learn these addition and subtraction facts for 14:

| | | | | |
|---|---|---|---|---|
| $\begin{array}{r} 5 \\ +9 \\ \hline 14 \end{array}$ | $\begin{array}{r} 6 \\ +8 \\ \hline 14 \end{array}$ | $\begin{array}{r} 7 \\ +7 \\ \hline 14 \end{array}$ | $\begin{array}{r} 8 \\ +6 \\ \hline 14 \end{array}$ | $\begin{array}{r} 9 \\ +5 \\ \hline 14 \end{array}$ |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| $\begin{array}{r} 14 \\ -5 \\ \hline 9 \end{array}$ | $\begin{array}{r} 14 \\ -6 \\ \hline 8 \end{array}$ | $\begin{array}{r} 14 \\ -7 \\ \hline 7 \end{array}$ | $\begin{array}{r} 14 \\ -8 \\ \hline 6 \end{array}$ | $\begin{array}{r} 14 \\ -9 \\ \hline 5 \end{array}$ |
|---|---|---|---|---|

Copy and write the answers.

- | | | | |
|-------------|-------------|------------------|------------------|
| 1. $14 - 5$ | 4. $14 - 8$ | 7. 14 | 8. 4 |
| 2. $9 + 5$ | 5. $5 + 9$ | $\underline{-9}$ | $\underline{+9}$ |
| 3. $14 - 6$ | 6. $13 - 9$ | | |

Copy and write the number for **n**.

- | a | b | c |
|------------------|--------------|--------------|
| 9. $13 - n = 8$ | $8 + n = 14$ | $n + 8 = 13$ |
| 10. $7 + n = 14$ | $14 - n = 7$ | $n + 7 = 13$ |
| 11. $n - 8 = 5$ | $6 + 8 = n$ | $n - 7 = 6$ |

Draw dot pictures to help you find these answers:

12. Hal has 5 green marbles and 8 red ones. How many marbles has he in all?

13. Sam earned 14 cents. He lost a nickel of it. How many cents did he have left?

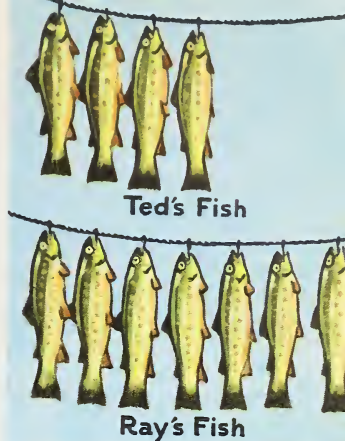
14. Sue had 13 stamps. She stamped her letters and had 9 stamps left. She used $__?$ stamps.

Finding Differences

Comparing by S. [O]

1. Ted and Ray went fishing.
How many fish did each boy catch?

The fish are in a 4-group and a 7-group. Cover Ted's fish and the same number of Ray's fish. How many of Ray's fish are not covered?



We say that Ray has 3 more fish than Ted or that Ted has 3 less fish than Ray.

To find the difference, we subtract.

$$7 \text{ fish} - 4 \text{ fish} = 3 \text{ fish.} \quad 7 - 4 = 3.$$

[W]

Draw dot pictures for Ex. 2 to 11.

2. How many **more** is 14 than 8? 13 than 5?

3. How many **less** is 8 than 12? 4 than 11?

Which number is **larger**? How much?

4. 10 or 4? 5. 7 or 13? 6. 14 or 5? 7. 6 or 11?

Which number is **smaller**? How much?

8. 11 or 7? 9. 13 or 4? 10. 5 or 12? 11. 6 or 13?

Finding the difference between two numbers is comparing them. We compare by subtracting.

Compare by finding the difference between

12. 11 and 3.

13. 9 and 13.

14. 7 and 12.

(ninety-nine) 99



Adding Three Numbers

Harder column A. [O]

Two boys have made a walk to the tent with boards. The boards are 6 feet, 5 feet, and 7 feet long. About how long is the board walk?

| A | B | C |
|-----------|-----------|------------|
| 6 | 3 | 5¢ |
| 5 | 9 | 7¢ |
| <u>+7</u> | <u>+4</u> | <u>+6¢</u> |
| 18 | 16 | 18¢ |

Study box A. **Add downward** and *think*,

6 and 5 are **11**, 11 and 7 are **18**.

Tell how the sums were found in boxes B and C.

[W]

Write sums for rows 1 and 2. Use folded paper.

| | a | b | c | d | e | f | g | h |
|----|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|
| 1. | 4 | 5 | 7 | 8 | 7 | 3 | 5 | 2¢ |
| | 8 | 6 | 2 | 3 | 4 | 5 | 4 | 4¢ |
| | <u>+3</u> | <u>+8</u> | <u>+5</u> | <u>+3</u> | <u>+7</u> | <u>+6</u> | <u>+4</u> | <u>+8¢</u> |
| 2. | 6 | 3 | 3 | 5 | 7 | 3 | 7 | 8¢ |
| | 5 | 6 | 9 | 7 | 1 | 8 | 5 | 1¢ |
| | <u>+2</u> | <u>+5</u> | <u>+3</u> | <u>+1</u> | <u>+6</u> | <u>+4</u> | <u>+7</u> | <u>+5¢</u> |

► **Extra Practice.** Work Set 17.

Checking Your Sums

[O]

1. Box A. Adding downward, $6 + 8 = ?$
 Adding upward, $8 + 6 = ?$

| |
|-----------|
| A |
| 6 |
| <u>+8</u> |
| ? |

2. When you add upward, do you get the same sum as when you add downward?

3. Box B. Adding downward, find the sum. Adding upward, find the sum.

| |
|-----------|
| B |
| 6 |
| 3 |
| <u>+4</u> |
| ? |

4. In box B, do you get the same sum adding both ways?

In column addition, first add downward. To check your work, add upward. You should get the same sum both times.

[W]

Copy and add. Check by adding upward.

- | | | | | |
|-----------|-----------|-----------|------------|------------|
| 5. 6 | 6. 6 | 7. 5 | 8. 3¢ | 9. 6¢ |
| 3 | 2 | 7 | 4¢ | 5¢ |
| <u>+5</u> | <u>+6</u> | <u>+4</u> | <u>+7¢</u> | <u>+6¢</u> |
| | | | | |
| 10. 5 | 11. 3 | 12. 7 | 13. 8¢ | 14. 3¢ |
| 3 | 9 | 5 | 5¢ | 8¢ |
| <u>+4</u> | <u>+3</u> | <u>+6</u> | <u>+6¢</u> | <u>+4¢</u> |

On page 100, add rows 1 and 2 again, and check.

Problem-solving [W]

1. Jack had 14 marbles and Jim had 6. How many more marbles did Jack have than Jim?

2. Sue paid 5¢ for candy and Nan paid 11¢. How much less did Sue pay than Nan?

3. Tom had 12 hens and Sam had 4. Compare the number of Tom's hens with Sam's.

What to Do with Zero (0)

Zero in addition [0]

If I have 3 cents and do not get any more, I know that I have only 3 cents. If I find 4 eggs in one nest and none in the next, I know that I have only 4 eggs.

A

$$\begin{array}{r} 20 \\ +7 \\ \hline 27 \end{array}$$

In box A, we see that there is **nothing (0)** to **add** to the 7 in one's place, so we write "7" in the sum at once.

There is nothing to add to the 2 in ten's place, so we write "2" in the sum in ten's place.

Cover the sums and say them:

| | a | b | c | d | e | f | g | h | i |
|----|------|------|------|------|-------|-------|------|-------|------|
| 1. | 10 | 30 | 70 | 20 | 7 | 6 | 50 | 3 | 90 |
| | $+4$ | $+6$ | $+2$ | $+8$ | $+80$ | $+40$ | $+6$ | $+60$ | $+5$ |
| | 14 | 36 | 72 | 28 | 87 | 46 | 56 | 63 | 95 |

2. Sue threw 3 darts. She scored 0 with the first dart, 5 with the next dart, and 8 with the last.



In box B, we put 0 to show that Sue had that turn.

Since she scored nothing the first time, she has **nothing to add**.

To find her total score, *think*, " $5 + 8 = 13$."

How can the sum be found in box C?

B

$$\begin{array}{r} 0 \\ 5 \\ +8 \\ \hline 13 \end{array}$$

C

$$\begin{array}{r} 9 \\ 0 \\ +5 \\ \hline 14 \end{array}$$



Write the sums on folded paper.

| | a | b | c | d | e | f | g |
|-----|-----------|-----------|------------|------------|-----------|------------|-----------|
| 9. | 20 | 80 | 5 | 9 | 50 | 6 | 30 |
| | <u>+7</u> | <u>+8</u> | <u>+40</u> | <u>+70</u> | <u>+4</u> | <u>+60</u> | <u>+3</u> |
| 10. | 7 | 5 | 4 | 0 | 2 | 6 | 0 |
| | 0 | 0 | 7 | 8 | 0 | 6 | 5 |
| | <u>+5</u> | <u>+6</u> | <u>+0</u> | <u>+4</u> | <u>+9</u> | <u>+0</u> | <u>+7</u> |
| 11. | 20 | 43 | 52 | 60 | 75 | 80 | 63 |
| | 3 | 0 | 7 | 6 | 0 | 3 | 0 |
| | <u>+6</u> | <u>+5</u> | <u>+0</u> | <u>+0</u> | <u>+4</u> | <u>+4</u> | <u>+6</u> |

➤ **Extra Practice.** Work Extra Practice Set 18.

Do You Know?

Progress Test 9 [W]

Write answers on folded paper.

| | a | b | c | d | e | f | g | h | i |
|----|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 1. | 4 | 14 | 9 | 6 | 13 | 14 | 6 | 11 | 13 |
| | <u>+9</u> | <u>-5</u> | <u>+4</u> | <u>+8</u> | <u>-4</u> | <u>-9</u> | <u>+7</u> | <u>-9</u> | <u>-7</u> |
| 2. | 12 | 3 | 13 | 11 | 12 | 8 | 12 | 2 | 14 |
| | <u>-7</u> | <u>+8</u> | <u>-8</u> | <u>-5</u> | <u>-9</u> | <u>+5</u> | <u>-4</u> | <u>+9</u> | <u>-6</u> |
| 3. | 7 | 5 | 11 | 14 | 4 | 13 | 11 | 7 | 12 |
| | <u>+7</u> | <u>+8</u> | <u>-7</u> | <u>-8</u> | <u>+7</u> | <u>-5</u> | <u>-8</u> | <u>+6</u> | <u>-8</u> |
| 4. | 13 | 12 | 9 | 12 | 13 | 5 | 11 | 14 | 8 |
| | <u>-9</u> | <u>-5</u> | <u>+5</u> | <u>-3</u> | <u>-6</u> | <u>+9</u> | <u>-6</u> | <u>-7</u> | <u>+6</u> |

Reading Three-Place Numbers

[O]

This page is numbered 104. We read "104" like this: "one hundred four." Do you hear any tens?

1. We say that 104 is a three-place number. Is that a good name for it? Why?

2. The next page is 105. Read it.

3. What is the number of the page next after 105?

4. Count by 1's from:

a. 100 to 112; b. 146 to 158; c. 177 to 191.

5. Count by 10's from:

a. 10 to 70; b. 60 to 120; c. 140 to 190.

6. You count by hundreds (100's) just as you count by 10's and by 1's: 100, 200, 300, and so on. Count by 100's from 100 to 900.

7. To count by 10's from 180 say, "180, 190, 200, 210," and so on. Count by 10's from

a. 460 to 570; b. 530 to 610; c. 680 to 800.

Count by 1's. Say the missing numbers.

8. 198, -?-, 200, -?-, 202, -?-, 204

9. 777, 778, -?-, -?-, -?-, 782, -?-

10. 465, -?-, -?-, 468, -?-, -?-, -?-

11. What numbers come just before and just after

a. 580? b. 961? c. 699? d. 400?

12. In this book which of these pages have pictures?

116 307 241 101 316 268

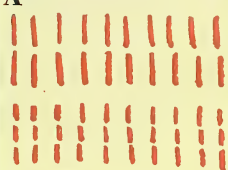
Adding Tens Is Easy

Meaning [O]


Tom counted 20 long crayons and 30 short crayons.
How many crayons in all did Tom count?

In box A, the two top rows of 10 marks stand for the 20 long crayons. The three bottom rows of 10 marks stand for the 30 short crayons.

A



B



C

$$\begin{array}{r}
 2 \text{ tens} \\
 + 3 \text{ tens} \\
 \hline
 ?
 \end{array}$$

1. To find how many crayons Tom counted, use the rows of marks in box A. Count by 10's.

2. In box B, to find the answer you can use ⌘ -numbers. Tell how.

3. Box C uses "tens."

$$2 \text{ tens} + 3 \text{ tens} = \text{?} \text{ tens}$$

[W]

Write your work for Ex. 4 to 8. Find the answers in two ways, as shown in boxes B and C. For the box B way, use ⌘ for ⌘ .

- | | | | | |
|-----------------|-----------------|-----------------|-----------------|-----------------|
| 4. 3 tens | 5. 2 tens | 6. 6 tens | 7. 4 tens | 8. 5 tens |
| <u>+ 3 tens</u> | <u>+ 5 tens</u> | <u>+ 2 tens</u> | <u>+ 3 tens</u> | <u>+ 4 tens</u> |

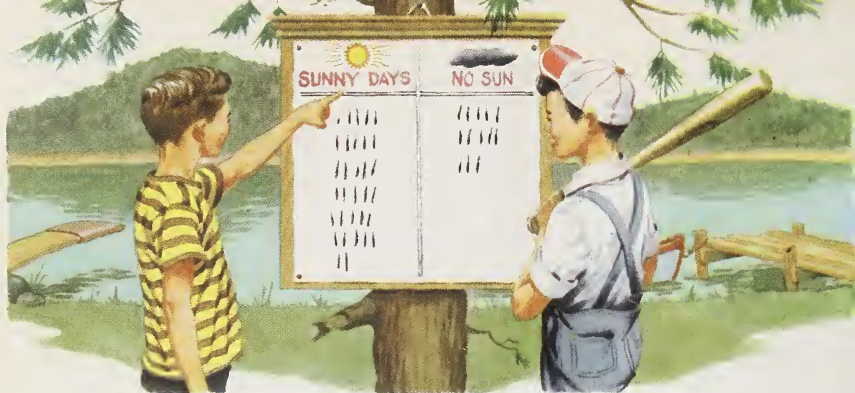
We can find the answer with figures, too, as in box D.

Write Ex. 4 to 8 with figures and find the sums.

D

$$\begin{array}{r}
 20 \\
 + 30 \\
 \hline
 50
 \end{array}$$

You add tens just as you add ones.




How Many Days in Camp?

Adding 2-place numbers; no carrying [O]

Tom asked Andy, "How many days have we been in camp?" The boys found out by counting marks.

1. How many days did the sun shine? not shine?
2. Find how many days the boys were in camp by counting all the marks.
3. Explain how to use Ⓢ 's and Ⓛ 's to find how many days the boys were in camp (box A).

| | | |
|---|--|--|
| <p>A</p>  | <p>B</p> $\begin{array}{r} 3 \text{ tens and } 2 \text{ ones} \\ + 1 \text{ ten and } 3 \text{ ones} \\ \hline ? \quad \text{and} \quad ? \\ \text{or } 45 \end{array}$ | <p>C</p> $\begin{array}{r} 32 \\ + 13 \\ \hline 45 \end{array}$ |
|---|--|--|

4. Box B uses tens and ones to add 32 and 13. Finish.
5. Box C shows a short way. **First add ones**, 2 and 3. *Think*, "5." Write "5" in one's place of the sum. **Then add tens**, 3 and 1. *Think*, "4," and write "4" in ten's place of the sum. Read the sum.
6. Does 45 mean "4 tens and 5 ones"?

Are the sums in Ex. 7 to 9 correct? Use ϕ -numbers to find out.

| | | | | |
|--|--|--|---|---|
| 7. $\begin{array}{r} 24 \\ +32 \\ \hline 56 \end{array}$ | 8. $\begin{array}{r} 50 \\ +38 \\ \hline 98 \end{array}$ | 9. $\begin{array}{r} 43 \\ +35 \\ \hline 78 \end{array}$ | 10. $\begin{array}{r} 65 \\ +30 \\ \hline 95 \end{array}$ | 11. $\begin{array}{r} 32 \\ +26 \\ \hline 18 \end{array}$ |
|--|--|--|---|---|

Are the sums in Ex. 10 and 11 correct? Use tens and ones to find out, as in box B.

Now cover the sums in Ex. 7 to 11. Use folded paper and find the sums the short way, as in box C.

Remember: **To check work in addition, add upward** (box D).
 Ones, $2+4=?$; tens, $5+3=?$

D Add $\begin{array}{r} 34 \\ +52 \\ \hline 86 \end{array}$ Check

↓
↑

Copy, add the short way and check in rows 12 to 15.

| | a | b | c | d | e | f |
|-----|--|--|--|--|--|--|
| 12. | $\begin{array}{r} 35 \\ +32 \\ \hline \end{array}$ | $\begin{array}{r} 73 \\ +26 \\ \hline \end{array}$ | $\begin{array}{r} 34 \\ +41 \\ \hline \end{array}$ | $\begin{array}{r} 86 \\ +10 \\ \hline \end{array}$ | $\begin{array}{r} 21 \\ +26 \\ \hline \end{array}$ | $\begin{array}{r} 64\phi \\ +13\phi \\ \hline \end{array}$ |
| 13. | $\begin{array}{r} 15 \\ +74 \\ \hline \end{array}$ | $\begin{array}{r} 61 \\ +28 \\ \hline \end{array}$ | $\begin{array}{r} 41 \\ +43 \\ \hline \end{array}$ | $\begin{array}{r} 25 \\ +71 \\ \hline \end{array}$ | $\begin{array}{r} 74 \\ +14 \\ \hline \end{array}$ | $\begin{array}{r} 53\phi \\ +41\phi \\ \hline \end{array}$ |
| 14. | $\begin{array}{r} 19 \\ +50 \\ \hline \end{array}$ | $\begin{array}{r} 51 \\ +14 \\ \hline \end{array}$ | $\begin{array}{r} 45 \\ +53 \\ \hline \end{array}$ | $\begin{array}{r} 12 \\ +25 \\ \hline \end{array}$ | $\begin{array}{r} 27 \\ +61 \\ \hline \end{array}$ | $\begin{array}{r} 44\phi \\ +25\phi \\ \hline \end{array}$ |
| 15. | $\begin{array}{r} 32 \\ +57 \\ \hline \end{array}$ | $\begin{array}{r} 36 \\ +62 \\ \hline \end{array}$ | $\begin{array}{r} 20 \\ +56 \\ \hline \end{array}$ | $\begin{array}{r} 51 \\ +28 \\ \hline \end{array}$ | $\begin{array}{r} 27 \\ +42 \\ \hline \end{array}$ | $\begin{array}{r} 23\phi \\ +14\phi \\ \hline \end{array}$ |

In adding 2-place numbers, first add ones and then add tens.

To check work in addition, add upward.

➤ **Extra Practice.** Work Sets 19 and 20.

Addition or Subtraction?

Problem-solving: differentiating A. and S. [W]

Add to find how many in all.

Subtract to find

- | | |
|--------------------------|---------------------------|
| a. how many left; | c. the other part; |
| b. how many gone; | d. the difference. |

Write your work for problems 1 to 7.

1. One day in the month of February it was snowing very hard at lunch time. Only 5 of the 38 girls went out. How many of the girls stayed in to play that day in the month of February?

2. In one game Tom's side made 8 runs. Sam's made 13 runs. By how many runs did Sam's side win?

3. When Susan was "It," she found 9 of the 14 players. How many were still hiding?

4. In a game, Joe scored 8, Bob 0, and Dick 5. How many scores did they make in all?

5. 12 girls made a ring. Two other girls threw the ball. In all, how many girls played?

6. The children had 18 minutes to play. After 6 minutes, how much time did they have?

7. After the bell rang, 6 of the 49 boys stayed to pick up papers. How many boys went in?

[O]

Tell if your answer for each subtraction problem shows

- | | |
|--------------------------|---------------------------|
| <u>a. how many left;</u> | <u>c. the other part;</u> |
| <u>b. how many gone;</u> | <u>d. the difference.</u> |

Write a problem for each moving picture. Work the problem on your paper.



Numbers May Name Things

Ordinal numbers [O]

1. As you know, **a number tells how many there are in a group**, as 7 trees, 27 cents, 4 tens. These are group numbers. Tell five group numbers.

2. Then, too, **a number may be used to name something**. "Page 110" names this page. It does not tell how many. Does "Room 115" tell how many or does it name the room by a number? Tell four naming numbers.

3. **Naming numbers may show the order of things**. In the picture below, point to the first, second, and third cars. **First, second, and third** are naming numbers that show order.

4. As you point to each car after the third say, "fourth," "fifth," "sixth," and so on. These numbers, like those in Ex. 3, are naming numbers that show order. With what letters do they end?

5. If the train were backing up, the end car would be first. Which car would be second? fifth? sixth?

After first, second, and third, the naming numbers which show order end in "th," as fourth, fifth, sixth, and so on.



6. In the box, how many animals are listed in all?
Can you tell without counting?

7. From the top, which animal is the sixth? fifth? ninth? seventh?

8. Do these numbers show the order of the animals in the list?

9. Is the word, mouse, ninth or sixth or seventh or fifth from the bottom?

10. What naming number tells the order from the top of each of these words: horse, pig, bear, cow, rabbit?

lion
bear
horse
cat
mouse
cow
monkey
dog
rabbit
pig

11. Do numbers put things in order? How?

12. A short way to write naming numbers that show order is: 1st, 2d, 3d, 4th, and so on. Nan was 12th to come into the room. How many came before her?

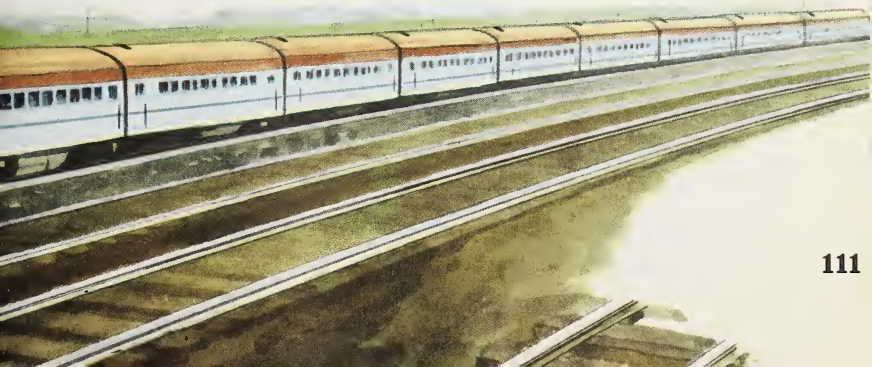
13. Count by naming numbers from 1st to 20th.

[W]

14. Copy the list of animals. After each word write in the short way its naming number.

15. Write this list of words with the shortest word first, the next longer word second, and so on:

Ann to tree numbers folded write



Written Practice in Addition

Write sums on folded paper. Check your work.

| | a | b | c | d | e | f |
|----|---------------------|---------------------|---------------------|---------------------|---------------------|------------------------|
| 1. | 40 <u>+30</u> | 23 <u>+5</u> | 52 <u>+37</u> | 38 <u>+50</u> | 60 <u>+8</u> | 45¢ <u>+24¢</u> |
| 2. | 76 <u>+20</u> | 24 <u>+34</u> | 30 <u>+60</u> | 51 <u>+27</u> | 33 <u>+4</u> | 7¢ <u>+90¢</u> |
| 3. | 34 <u>+21</u> | 5 <u>+30</u> | 62 <u>+26</u> | 12 <u>+52</u> | 20 <u>+50</u> | 26¢ <u>+43¢</u> |
| 4. | 2 8 <u>+3</u> | 4 6 <u>+4</u> | 6 5 <u>+4</u> | 9 5 <u>+5</u> | 6 4 <u>+8</u> | 8¢ 5¢ <u>+6¢</u> |

What Is **n**? No Pencils, Please!

[O]

Say each example, giving the number for **n**.

| a | b | c |
|-----------------|--------------|--------------|
| 1. $11 - 9 = n$ | $10 - n = 3$ | $12 - n = 9$ |
| 2. $13 - n = 4$ | $n - 5 = 5$ | $n - 5 = 8$ |
| 3. $14 - 9 = n$ | $n - 7 = 6$ | $11 - 5 = n$ |
| 4. $n - 6 = 4$ | $13 - 4 = n$ | $n - 2 = 9$ |
| 5. $n - 9 = 3$ | $11 - n = 5$ | $13 - n = 7$ |
| 6. $n - 8 = 3$ | $n - 8 = 6$ | $10 - n = 2$ |
| 7. $13 - 8 = n$ | $n - 3 = 7$ | $12 - n = 6$ |
| 8. $n - 4 = 8$ | $14 - n = 7$ | $n - 3 = 8$ |

[W]

Now copy rows 1 to 8 writing the numbers for **n**.



Buying Food for Mother

Problem-solving; making problems [W]

Make six problems using this story. Write each problem on a different piece of paper so that other people may work them. Can you do them yourself?

At the store Jane bought bread worth 14¢ and some rolls worth 15¢.

One kind of fish cost 39¢ a pound, and another kind cost 59¢ a pound. Jane bought a pound of the first kind.

At the fruit stand Jane paid 20¢ for oranges, 4¢ for an apple, and 5¢ for a pear.

Jane's empty basket weighed 2 pounds. The basket with the food in it weighed 12 pounds.

Her mother gave her a dime and a nickel for helping. Jane bought candy for 5¢.

It took Jane 7 minutes to walk to the store today and 12 minutes to walk home.

15 and Its Facts

[O]

1. $9 + 6 = ?$ $+$

With your hands, ring 10 dots. Then finish:

$$10 \text{ dots} + \text{? dots} = \text{? dots},$$

so $9 \text{ dots} + 6 \text{ dots} = \underline{\quad? \quad} \text{ dots.}$ $9 + 6 = ?$

2. Now use the dots above to find the answers for

$6 + 9 = ? \quad 15 - 9 = ? \quad 15 - 6 = ?$

3. Tell the whole story in addition and subtraction about 9, 6, and 15.

4. $8 + 7 = ?$

From these dots, find the answers for

$8 + 7 = ?$ $7 + 8 = ?$ $15 - 8 = ?$ $15 - 7 = ?$

5. Tell the whole story about 8, 7, and 15.

Say whole stories to help you learn these addition and subtraction facts for 15:

$$\begin{array}{r} 6 \\ + 9 \\ \hline 15 \end{array}$$

$$\begin{array}{r} 7 \\ + 8 \\ \hline 15 \end{array}$$

$$\begin{array}{r} 8 \\ + 7 \\ \hline 15 \end{array}$$

$$\begin{array}{r} 9 \\ + 6 \\ \hline 15 \end{array}$$

$$\begin{array}{r} 15 \\ - 6 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 15 \\ - 7 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 15 \\ - 8 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 15 \\ -9 \\ \hline 6 \end{array}$$

[W]

Draw dot pictures to help you in Ex. 6 to 13.

6. $9 + 6 = ?$

9. $8 + 7 = ?$

12. 15

7. $15 - 6 = ?$

10. $6 + 9 = ?$

-9

8. $15 - 7 = ?$

11. $7 + 8 = ?$

13. 15

— 8

Copy and write the number for **n**.

14. $7 + n = 15$

16. $6 + n = 15$

18. $15 - 7 = n$

15. $15 - n = 6$

17. $n + 8 = 15$

19. $15 - n = 9$

Write the work for Ex. 20 to 23.

20. For putting together a box, Tom had 15 nails. He used 6 nails. How many are left to use?

21. My walk home takes 15 minutes. After walking for 7 minutes, I have $_?$ minutes to walk.

22. How many people are 9 men and 6 women?

23. Susan has 15¢ in pennies. Eight pennies are new. How many are old?

Find the four addition facts for 15 on page 128 and see if you know them. Do the same for the five facts for 14 and the six facts for 13. Say the subtraction facts for 15, 14, and 13, page 132.

Written Practice

Add and check. Copy Ex. 1 to 6 in columns and Ex. 7 to 12 the left-to-right way.

- | | | |
|-------------|-------------|----------------|
| 1. 5, 1, 8 | 2. 7, 6, 2 | 3. 5¢, 2¢, 6¢ |
| 4. 2, 9, 5 | 5. 6, 0, 9 | 6. 2¢, 5¢, 8¢ |
| 7. 2, 4, 9 | 8. 4, 4, 7 | 9. 4¢, 7¢, 8¢ |
| 10. 3, 8, 6 | 11. 3, 4, 6 | 12. 4¢, 3¢, 8¢ |

Copy Ex. 13 to 21 and write numbers for **n**. In Ex. 13, **n** = 5 because $9 + 5 = 14$ or $14 - 9 = 5$.

- | | | | | | |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 13. 6 | 14. 2 | 15. 2 | 16. 1 | 17. n | 18. 5 |
| 3 | 6 | n | 2 | 3 | n |
| $\frac{+n}{14}$ | $\frac{+n}{14}$ | $\frac{+3}{13}$ | $\frac{+n}{11}$ | $\frac{+3}{15}$ | $\frac{+3}{13}$ |

19. $6 + 1 + n = 14$ 20. $3 + n + 5 = 15$ 21. $n + 7 + 2 = 15$



Rusty's Sunday Ride

Subtracting tens; meaning [O]

One Sunday, Rusty rode with his father to a town 70 miles away. After they had gone 50 miles, how many more miles did they have to go?

1. Can you get the answer by using $\text{\textcircled{0}}$ -picture A?



2. Use "tens" to find the answer.

$$7 \text{ tens} - 5 \text{ tens} = 2 \text{ tens, or } \begin{array}{r} 7 \text{ tens} \\ - 5 \text{ tens} \\ \hline ? \end{array}$$

[W]

Draw $\text{\textcircled{0}}$ -pictures to help you in Ex. 3 to 10.

- | | | | |
|--|--|--|---|
| 3. $\begin{array}{r} 9 \text{ tens} \\ - 3 \text{ tens} \\ \hline \end{array}$ | 4. $\begin{array}{r} 6 \text{ tens} \\ - 4 \text{ tens} \\ \hline \end{array}$ | 5. $\begin{array}{r} 5 \text{ tens} \\ - 4 \text{ tens} \\ \hline \end{array}$ | 6. $\begin{array}{r} 7 \text{ tens} \\ - 4 \text{ tens} \\ \hline \end{array}$ |
| 7. $\begin{array}{r} 8 \text{ tens} \\ - 6 \text{ tens} \\ \hline \end{array}$ | 8. $\begin{array}{r} 6 \text{ tens} \\ - 3 \text{ tens} \\ \hline \end{array}$ | 9. $\begin{array}{r} 8 \text{ tens} \\ - 5 \text{ tens} \\ \hline \end{array}$ | 10. $\begin{array}{r} 9 \text{ tens} \\ - 7 \text{ tens} \\ \hline \end{array}$ |

You can find the answer for Ex. 3 with figures, as in box B. Write Ex. 4 to 10 with figures and find the remainders.

$$\begin{array}{r} \text{B} \\ 90 \\ - 30 \\ \hline 60 \end{array}$$

You subtract tens just as you subtract ones.



Sue Paints Flower Cards

2-place S.; no borrowing [O]

Sue has 57 flower cards. She has painted 23 of them.
How many more cards does she have left to paint?

1. Tell how to find the answer in box A; in box B.

| A | B | C |
|---|---|--|
| | <p>5 tens and 7 ones $- 2 \text{ tens and } 3 \text{ ones}$ <hr/> ? and ? , or $- ? -$</p> | <p>57 $- 23$ <hr/> 34</p> |

2. For the short way, look at box C.

Subtract ones, $7 - 3$. *Think*, “4.” Write “4” in one’s place in the answer.

Subtract tens, $5 - 2$. *Think*, “3.” Write “3” in ten’s place in the answer. $57 - 23 = ?$

Tell how to work Ex. 3 to 7 the short way.

| | | | | |
|--|--|--|--|---|
| 3. $\begin{array}{r} 86 \\ -43 \\ \hline 43 \end{array}$ | 4. $\begin{array}{r} 78 \\ -22 \\ \hline 56 \end{array}$ | 5. $\begin{array}{r} 57 \\ -30 \\ \hline 27 \end{array}$ | 6. $\begin{array}{r} 69 \\ -59 \\ \hline 10 \end{array}$ | 7. $\begin{array}{r} 96\text{¢} \\ -92\text{¢} \\ \hline 4\text{¢} \end{array}$ |
|--|--|--|--|---|

8. On the board, check Ex. 3 to 7 by ϕ ’s or with tens and ones.

What to Do with Zero (0)

[O]

If Joe goes into a store with 5¢ and spends nothing (0) we know at once that he still has 5¢. If he spends all of his 5¢, we know at once that he has nothing (0) left.

1. In box A, we see that there is **nothing to be done in one's place**. We write "0" in the remainder in one's place. The next number in the remainder will be in ten's place.

$$6 \text{ tens} - 2 \text{ tens} = 4 \text{ tens}$$

We write "4" in the remainder in ten's place.

2. In box B, there is **nothing to be taken from the 2 in one's place**. Write 2 at once in the remainder in one's place. The next number will be in ten's place.

$$8 \text{ tens} - 5 \text{ tens} = 3 \text{ tens}$$

Write 3 in ten's place in the remainder.

3. In box C, we know at once that if we take 6 ones from 6 ones **there is nothing left**. Just write "0" in the remainder in one's place. The next number will be in ten's place.

5 tens - 3 tens = 2 tens. Write "2" in ten's place.

Cover the remainders and say them:

| | | | | |
|---|---|---|---|---|
| 4. 40 | 5. 30 | 6. 66 | 7. 85 | 8. 65 |
| $\begin{array}{r} 40 \\ -30 \\ \hline 10 \end{array}$ | $\begin{array}{r} 30 \\ -10 \\ \hline 20 \end{array}$ | $\begin{array}{r} 66 \\ -30 \\ \hline 36 \end{array}$ | $\begin{array}{r} 85 \\ -40 \\ \hline 45 \end{array}$ | $\begin{array}{r} 65 \\ -25 \\ \hline 40 \end{array}$ |

[W]

 **Extra Practice.** Work Extra Practice Set 21.

Write the remainders on folded paper.

| | a | b | c | d | e | f |
|-----|--|--|--|--|--|--|
| 9. | $\begin{array}{r} 79 \\ -51 \\ \hline \end{array}$ | $\begin{array}{r} 89 \\ -28 \\ \hline \end{array}$ | $\begin{array}{r} 80 \\ -50 \\ \hline \end{array}$ | $\begin{array}{r} 56 \\ -21 \\ \hline \end{array}$ | $\begin{array}{r} 48 \\ -43 \\ \hline \end{array}$ | $\begin{array}{r} 98¢ \\ -47¢ \\ \hline \end{array}$ |
| 10. | $\begin{array}{r} 46 \\ -42 \\ \hline \end{array}$ | $\begin{array}{r} 69 \\ -23 \\ \hline \end{array}$ | $\begin{array}{r} 87 \\ -64 \\ \hline \end{array}$ | $\begin{array}{r} 97 \\ -72 \\ \hline \end{array}$ | $\begin{array}{r} 50 \\ -20 \\ \hline \end{array}$ | $\begin{array}{r} 98¢ \\ -50¢ \\ \hline \end{array}$ |
| 11. | $\begin{array}{r} 69 \\ -62 \\ \hline \end{array}$ | $\begin{array}{r} 80 \\ -30 \\ \hline \end{array}$ | $\begin{array}{r} 95 \\ -40 \\ \hline \end{array}$ | $\begin{array}{r} 79 \\ -24 \\ \hline \end{array}$ | $\begin{array}{r} 65 \\ -53 \\ \hline \end{array}$ | $\begin{array}{r} 79¢ \\ -46¢ \\ \hline \end{array}$ |
| 12. | $\begin{array}{r} 95 \\ -22 \\ \hline \end{array}$ | $\begin{array}{r} 96 \\ -74 \\ \hline \end{array}$ | $\begin{array}{r} 95 \\ -54 \\ \hline \end{array}$ | $\begin{array}{r} 74 \\ -50 \\ \hline \end{array}$ | $\begin{array}{r} 70 \\ -40 \\ \hline \end{array}$ | $\begin{array}{r} 84¢ \\ -13¢ \\ \hline \end{array}$ |

In subtracting 2-place numbers, first subtract ones, then subtract tens.

 **Extra Practice.** Work Sets 22 and 23.

What Is n? No Pencils, Please!

[O]

Say each example, giving the number for **n**.

| | a | b | c |
|----|--------------|--------------|--------------|
| 1. | $6 + n = 14$ | $n - 8 = 6$ | $n - 7 = 7$ |
| 2. | $n - 9 = 5$ | $n - 8 = 3$ | $6 + n = 15$ |
| 3. | $15 - n = 8$ | $8 + n = 15$ | $13 - n = 6$ |
| 4. | $n + 9 = 14$ | $n + 7 = 13$ | $n + 5 = 14$ |
| 5. | $n - 8 = 5$ | $5 + n = 12$ | $n - 6 = 8$ |
| 6. | $15 - n = 6$ | $15 - n = 9$ | $15 - n = 7$ |
| 7. | $n - 4 = 8$ | $n - 4 = 9$ | $n - 5 = 7$ |
| 8. | $13 - 8 = n$ | $n + 7 = 12$ | $12 - n = 7$ |

Checking Subtraction Answers

No borrowing; checking [O]

Check your work and know that your answers are right.

| A | B |
|---|---|
| $\begin{array}{r} 14 \\ -9 \\ \hline 5 \end{array}$ | $\begin{array}{r} 39 \\ -14 \\ \hline 25 \end{array}$ |

Box A. 9 and 5 are the parts of 14. **To check your subtraction, add the parts upward.** $5 + 9 = 14$.

Is 14 the number you subtracted from?

1. In box B, what are the parts of 39? Add the parts upward. Do you get the number you subtracted from?

2. $65 - 3 = 62$. Check the answer. $62 + 3 = ?$

To check subtraction, add the answer and the number taken away.

That sum always should equal the number subtracted from.

[W]

Write remainders on folded paper. Check.

| | a | b | c | d | e | f |
|----|--|--|--|--|--|--|
| 3. | $\begin{array}{r} 59 \\ -27 \\ \hline \end{array}$ | $\begin{array}{r} 86 \\ -63 \\ \hline \end{array}$ | $\begin{array}{r} 58 \\ -41 \\ \hline \end{array}$ | $\begin{array}{r} 70 \\ -60 \\ \hline \end{array}$ | $\begin{array}{r} 93 \\ -42 \\ \hline \end{array}$ | $\begin{array}{r} 65¢ \\ -24¢ \\ \hline \end{array}$ |
| 4. | $\begin{array}{r} 48 \\ -32 \\ \hline \end{array}$ | $\begin{array}{r} 89 \\ -35 \\ \hline \end{array}$ | $\begin{array}{r} 59 \\ -36 \\ \hline \end{array}$ | $\begin{array}{r} 70 \\ -30 \\ \hline \end{array}$ | $\begin{array}{r} 86 \\ -74 \\ \hline \end{array}$ | $\begin{array}{r} 96¢ \\ -21¢ \\ \hline \end{array}$ |
| 5. | $\begin{array}{r} 70 \\ -20 \\ \hline \end{array}$ | $\begin{array}{r} 95 \\ -32 \\ \hline \end{array}$ | $\begin{array}{r} 86 \\ -52 \\ \hline \end{array}$ | $\begin{array}{r} 47 \\ -24 \\ \hline \end{array}$ | $\begin{array}{r} 89 \\ -44 \\ \hline \end{array}$ | $\begin{array}{r} 68¢ \\ -54¢ \\ \hline \end{array}$ |
| 6. | $\begin{array}{r} 78 \\ -24 \\ \hline \end{array}$ | $\begin{array}{r} 20 \\ -10 \\ \hline \end{array}$ | $\begin{array}{r} 47 \\ -27 \\ \hline \end{array}$ | $\begin{array}{r} 99 \\ -88 \\ \hline \end{array}$ | $\begin{array}{r} 76 \\ -62 \\ \hline \end{array}$ | $\begin{array}{r} 58¢ \\ -25¢ \\ \hline \end{array}$ |

Facts for 16, 17, and 18

[O]

1. $9 + 7 = ?$ ● ● ● ● ● ● ● ● ● ● + ● ● ● ● ● ● ● ●

Cover 10 dots and *think*, “10 dots + $_{-}?$ dots = $_{-}?$ dots,
so $9 \text{ dots} + 7 \text{ dots} = \text{ }_{-}?\text{ }_{-} \text{ dots}.$ ” $9 + 7 = ?$

2. Now find from the dots the answers to

$7 + 9 = ?$ $16 - 7 = ?$ $16 - 9 = ?$

3. Tell the whole story about 9, 7, and 16.

4. $8 + 8 = ?$ ● ● ● ● ● ● ● ● + ● ● ● ● ● ● ● ●

Use the dots to help you tell the whole story.

5. $9 + 8 = ?$ ● ● ● ● ● ● ● ● ● ● + ● ● ● ● ● ● ● ●

Use 10 dots and find the whole story.

6. $9 + 9 = ?$ ● ● ● ● ● ● ● ● ● ● + ● ● ● ● ● ● ● ● ● ●

Tell the whole story in addition and subtraction.

7. What two new doubles are on this page?

[W]

Draw dot pictures. Then copy and finish these:

| | | | |
|---|---|--|--|
| 8. $9 + 7$ | 9. $16 - 9$ | 10. $8 + 8$ | 11. $18 - 9$ |
| 12. $7 + 9$ | 13. $17 - 8$ | 14. $8 + 9$ | 15. $16 - 7$ |
| 16. $\begin{array}{r} 16 \\ -8 \\ \hline \end{array}$ | 17. $\begin{array}{r} 17 \\ -9 \\ \hline \end{array}$ | 18. $\begin{array}{r} 9 \\ +8 \\ \hline \end{array}$ | 19. $\begin{array}{r} 9 \\ +9 \\ \hline \end{array}$ |

See if you know these facts for 16, 17, and 18:

| | | | | | |
|---|---|---|---|---|---|
| $\begin{array}{r} 7 \\ +9 \\ \hline 16 \end{array}$ | $\begin{array}{r} 8 \\ +8 \\ \hline 16 \end{array}$ | $\begin{array}{r} 9 \\ +7 \\ \hline 16 \end{array}$ | $\begin{array}{r} 8 \\ +9 \\ \hline 17 \end{array}$ | $\begin{array}{r} 9 \\ +8 \\ \hline 17 \end{array}$ | $\begin{array}{r} 9 \\ +9 \\ \hline 18 \end{array}$ |
| $\begin{array}{r} 16 \\ -7 \\ \hline 9 \end{array}$ | $\begin{array}{r} 16 \\ -8 \\ \hline 8 \end{array}$ | $\begin{array}{r} 16 \\ -9 \\ \hline 7 \end{array}$ | $\begin{array}{r} 17 \\ -8 \\ \hline 9 \end{array}$ | $\begin{array}{r} 17 \\ -9 \\ \hline 8 \end{array}$ | $\begin{array}{r} 18 \\ -9 \\ \hline 9 \end{array}$ |

Practice in Addition and Subtraction

[W]

Copy each example, writing the number for n .

| a | b | c |
|-----------------|--------------|--------------|
| 1. $17 - n = 8$ | $n - 9 = 6$ | $18 - 9 = n$ |
| 2. $n - 8 = 8$ | $15 - n = 8$ | $7 + 9 = n$ |
| 3. $7 + 8 = n$ | $5 + n = 14$ | $8 + n = 16$ |
| 4. $16 - n = 7$ | $17 - 8 = n$ | $n - 8 = 6$ |
| 5. $8 + 9 = n$ | $n + 7 = 16$ | $9 + n = 17$ |
| 6. $18 - n = 9$ | $13 - 6 = n$ | $15 - 6 = n$ |
| 7. $15 - 7 = n$ | $9 + n = 14$ | $16 - 8 = n$ |
| 8. $14 - n = 7$ | $6 + 6 = n$ | $8 + n = 15$ |

Write the other part of the number, if

- | | |
|--------------------------|--------------------------|
| 9. one part of 16 is 7. | 11. one part of 16 is 8. |
| 10. one part of 18 is 9. | 12. one part of 17 is 9. |

Write answers on folded paper. Check your work.

| a | b | c | d | e | f | g |
|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|--------------------|
| 13. 89 | 12 | 40 | 37 | 3 | 48 | $76¢$ |
| $\underline{-37}$ | $\underline{+77}$ | $\underline{+37}$ | $\underline{-4}$ | $\underline{+56}$ | $\underline{-45}$ | $\underline{+3¢}$ |
| 14. 70 | 29 | 38 | 62 | 65 | 19 | $23¢$ |
| $\underline{+20}$ | $\underline{-3}$ | $\underline{-12}$ | $\underline{+5}$ | $\underline{-24}$ | $\underline{-9}$ | $\underline{+62¢}$ |
| 15. 58 | 5 | 68 | 87 | 46 | 46 | $17¢$ |
| $\underline{+20}$ | $\underline{+43}$ | $\underline{-6}$ | $\underline{-80}$ | $\underline{+52}$ | $\underline{-6}$ | $\underline{-7¢}$ |
| 16. 79 | 29 | 51 | 48 | 60 | 87 | $89¢$ |
| $\underline{-54}$ | $\underline{-5}$ | $\underline{+48}$ | $\underline{-4}$ | $\underline{+10}$ | $\underline{-6}$ | $\underline{-16¢}$ |

► **Extra Practice.** Work Extra Practice Set 24.



Sue and Ann Go to the Fair

Problem-solving: differentiating A. and S. [W]

Write the work for Ex. 1 to 7.

1. Sue took 95¢ in spending money to the fair. Ann took 15¢ less than Sue, or how much?

2. Sue paid 35¢ for ice cream and 30¢ for rides. How much did she spend for these things?

3. Ann counted 28 peanuts in the bag she bought. After eating 8, she had how many left?

4. Ann gave 3 peanuts to the first elephant, 2 to the second, and 7 to the third, or how many peanuts in all?

5. Ann counted in all 12 girls and 15 boys on the merry-go-round. That was how many children in all?

6. While Sue watched, a man sold 9 of the 29 whistles he had. That left how many to sell?

7. Ann saw 28 balloons for sale. Twenty of them were red. How many were some other color?

Understanding about Our Money

Coins; dollar sign; cent point [O]



1. Starting at the left, name the coin which is

- | | | |
|------------|------------|-----------|
| a. first; | c. third; | e. fifth; |
| b. second; | d. fourth; | f. sixth. |

2. Which of the coins above is worth

- | | | | |
|---------|---------|--------|---------|
| a. 10¢? | b. 50¢? | c. 5¢? | d. 25¢? |
|---------|---------|--------|---------|

The coin at the right (the dollar) is worth 100¢, but we write it as “\$1.00” most of the time. The sign \$ is the **dollar sign**. The **dot** in \$1.00 is the **cent point**.

\$1.05 = one dollar and five cents. We say “and” for the cent point when we read dollars and cents.

\$6.72 = six dollars and seventy-two cents.

\$0.31 = thirty-one cents.

\$0.09 = nine cents.

3. When you write money numbers with the dollar sign and the cent point, how many places show cents?

4. When there are no dollars, how do you show it?

5. Read these money numbers:

- | | | | |
|------------|------------|------------|-----------|
| a. \$2.56; | b. \$0.69; | c. \$5.06; | d. \$9.17 |
|------------|------------|------------|-----------|



6. Read the money numbers in the picture.

[W]

7. Write with the dollar sign and cent point

- a. Two dollars and ten cents;
- b. Five dollars and two cents;
- c. Seven dollars and twenty-five cents;
- d. 87¢; e. 13¢; f. 7¢.

8. How much money is a dime and a nickel? Write the numbers for the coins as in the box and add.

| |
|---|
| $ \begin{array}{r} 10\text{¢} \\ + 5\text{¢} \\ \hline ? \end{array} $ |
|---|

9. How much money do these coins make:

- a. A half dollar and a quarter?
- b. A dime and three pennies?
- c. A dime, a nickel, and three pennies?

10. How much was left if you had

- a. a quarter and spent 4¢? b. 28¢ and spent 5¢?

11. How much less is 5¢ than a quarter? 7¢ than 17¢?

What Is **n**? No Pencils, Please!

[O]

Say by rows and then by columns.

| a | b | c |
|-----------------|--------------|--------------|
| 1. $n + 9 = 18$ | $9 + n = 16$ | $5 + 9 = n$ |
| 2. $16 - n = 7$ | $n - 7 = 7$ | $18 - n = 9$ |
| 3. $7 + 8 = n$ | $8 + 9 = n$ | $n - 8 = 8$ |
| 4. $n + 6 = 13$ | $9 + 5 = n$ | $6 + n = 15$ |
| 5. $7 + 9 = n$ | $n - 8 = 9$ | $15 - n = 8$ |
| 6. $15 - n = 9$ | $9 + n = 17$ | $n + 8 = 16$ |
| 7. $n - 9 = 8$ | $14 - 8 = n$ | $n + 6 = 14$ |

Now in the first two rows turn each fact around. For Ex. 1a say, “ $9 + 9 = 18$, so $18 = 9 + 9$.” For Ex. 2a say, “ $16 - 9 = 7$, so $7 = 16 - 9$.”

Do You Know?

Progress Test 10 [W]

Write the answers on folded paper.

| | | | | |
|--|--|--|--|--|
| 1. $\begin{array}{r} 74 \\ -30 \\ \hline \end{array}$ | 2. $\begin{array}{r} 98 \\ -38 \\ \hline \end{array}$ | 3. $\begin{array}{r} 35 \\ +60 \\ \hline \end{array}$ | 4. $\begin{array}{r} 98 \\ -57 \\ \hline \end{array}$ | 5. $\begin{array}{r} 32¢ \\ +57¢ \\ \hline \end{array}$ |
| 6. $\begin{array}{r} 89 \\ -2 \\ \hline \end{array}$ | 7. $\begin{array}{r} 71 \\ +8 \\ \hline \end{array}$ | 8. $\begin{array}{r} 89 \\ -67 \\ \hline \end{array}$ | 9. $\begin{array}{r} 42 \\ +56 \\ \hline \end{array}$ | 10. $\begin{array}{r} 90¢ \\ -40¢ \\ \hline \end{array}$ |
| 11. $\begin{array}{r} 97 \\ -64 \\ \hline \end{array}$ | 12. $\begin{array}{r} 40 \\ +30 \\ \hline \end{array}$ | 13. $\begin{array}{r} 68 \\ -5 \\ \hline \end{array}$ | 14. $\begin{array}{r} 65 \\ -30 \\ \hline \end{array}$ | 15. $\begin{array}{r} 5¢ \\ +74¢ \\ \hline \end{array}$ |
| 16. $\begin{array}{r} 20 \\ +46 \\ \hline \end{array}$ | 17. $\begin{array}{r} 86 \\ +2 \\ \hline \end{array}$ | 18. $\begin{array}{r} 54 \\ -34 \\ \hline \end{array}$ | 19. $\begin{array}{r} 87 \\ +2 \\ \hline \end{array}$ | 20. $\begin{array}{r} 87¢ \\ -47¢ \\ \hline \end{array}$ |
| 21. $\begin{array}{r} 52 \\ +6 \\ \hline \end{array}$ | 22. $\begin{array}{r} 7 \\ +41 \\ \hline \end{array}$ | 23. $\begin{array}{r} 30 \\ -10 \\ \hline \end{array}$ | 24. $\begin{array}{r} 78 \\ -46 \\ \hline \end{array}$ | 25. $\begin{array}{r} 46¢ \\ -33¢ \\ \hline \end{array}$ |



A New Look at Addition

Review [O]

1. Why can we say that picture A shows a **group of like-things**? Picture B? Picture C? What are “like-things”?

A group is made up of 2 or more like-things.

2. The 6 in 6 hats and the 2 in 2 trees are numbers. Tell a number for picture C.

3. We put together, or add, groups to make a larger group, called the **sum**. In picture D, 3 rabbits and 2 rabbits are how many rabbits? What is the sum?

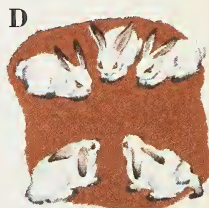
4. In E, 3 cups and 2 cups are how many cups in all?

5. The numbers 3, 2, and 5 may stand for rabbits or cups or any things alike in some way.

When you see $3 + 2 = 5$, you can *think*, “3 things added to 2 things of the same kind make $3 + 2 = 5$ like-things in all.”

Box F shows 3 **addition facts**.

An addition fact has two 1-place numbers and their sum.



| | |
|--------------|----|
| F | |
| 2 | 4 |
| +3 | +7 |
| 5 | 11 |
| $9 + 3 = 12$ | |

You should know the 81 facts on page 128. Cover the answers and see if you know all of them.

The 81 Addition Facts

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| $\begin{array}{r} 1 \\ +1 \\ \hline 2 \end{array}$ | $\begin{array}{r} 1 \\ +2 \\ \hline 3 \end{array}$ | $\begin{array}{r} 1 \\ +3 \\ \hline 4 \end{array}$ | $\begin{array}{r} 1 \\ +4 \\ \hline 5 \end{array}$ | $\begin{array}{r} 1 \\ +5 \\ \hline 6 \end{array}$ | $\begin{array}{r} 1 \\ +6 \\ \hline 7 \end{array}$ | $\begin{array}{r} 1 \\ +7 \\ \hline 8 \end{array}$ | $\begin{array}{r} 1 \\ +8 \\ \hline 9 \end{array}$ | $\begin{array}{r} 1 \\ +9 \\ \hline 10 \end{array}$ |
| $\begin{array}{r} 2 \\ +1 \\ \hline 3 \end{array}$ | $\begin{array}{r} 2 \\ +2 \\ \hline 4 \end{array}$ | $\begin{array}{r} 2 \\ +3 \\ \hline 5 \end{array}$ | $\begin{array}{r} 2 \\ +4 \\ \hline 6 \end{array}$ | $\begin{array}{r} 2 \\ +5 \\ \hline 7 \end{array}$ | $\begin{array}{r} 2 \\ +6 \\ \hline 8 \end{array}$ | $\begin{array}{r} 2 \\ +7 \\ \hline 9 \end{array}$ | $\begin{array}{r} 2 \\ +8 \\ \hline 10 \end{array}$ | $\begin{array}{r} 2 \\ +9 \\ \hline 11 \end{array}$ |
| $\begin{array}{r} 3 \\ +1 \\ \hline 4 \end{array}$ | $\begin{array}{r} 3 \\ +2 \\ \hline 5 \end{array}$ | $\begin{array}{r} 3 \\ +3 \\ \hline 6 \end{array}$ | $\begin{array}{r} 3 \\ +4 \\ \hline 7 \end{array}$ | $\begin{array}{r} 3 \\ +5 \\ \hline 8 \end{array}$ | $\begin{array}{r} 3 \\ +6 \\ \hline 9 \end{array}$ | $\begin{array}{r} 3 \\ +7 \\ \hline 10 \end{array}$ | $\begin{array}{r} 3 \\ +8 \\ \hline 11 \end{array}$ | $\begin{array}{r} 3 \\ +9 \\ \hline 12 \end{array}$ |
| $\begin{array}{r} 4 \\ +1 \\ \hline 5 \end{array}$ | $\begin{array}{r} 4 \\ +2 \\ \hline 6 \end{array}$ | $\begin{array}{r} 4 \\ +3 \\ \hline 7 \end{array}$ | $\begin{array}{r} 4 \\ +4 \\ \hline 8 \end{array}$ | $\begin{array}{r} 4 \\ +5 \\ \hline 9 \end{array}$ | $\begin{array}{r} 4 \\ +6 \\ \hline 10 \end{array}$ | $\begin{array}{r} 4 \\ +7 \\ \hline 11 \end{array}$ | $\begin{array}{r} 4 \\ +8 \\ \hline 12 \end{array}$ | $\begin{array}{r} 4 \\ +9 \\ \hline 13 \end{array}$ |
| $\begin{array}{r} 5 \\ +1 \\ \hline 6 \end{array}$ | $\begin{array}{r} 5 \\ +2 \\ \hline 7 \end{array}$ | $\begin{array}{r} 5 \\ +3 \\ \hline 8 \end{array}$ | $\begin{array}{r} 5 \\ +4 \\ \hline 9 \end{array}$ | $\begin{array}{r} 5 \\ +5 \\ \hline 10 \end{array}$ | $\begin{array}{r} 5 \\ +6 \\ \hline 11 \end{array}$ | $\begin{array}{r} 5 \\ +7 \\ \hline 12 \end{array}$ | $\begin{array}{r} 5 \\ +8 \\ \hline 13 \end{array}$ | $\begin{array}{r} 5 \\ +9 \\ \hline 14 \end{array}$ |
| $\begin{array}{r} 6 \\ +1 \\ \hline 7 \end{array}$ | $\begin{array}{r} 6 \\ +2 \\ \hline 8 \end{array}$ | $\begin{array}{r} 6 \\ +3 \\ \hline 9 \end{array}$ | $\begin{array}{r} 6 \\ +4 \\ \hline 10 \end{array}$ | $\begin{array}{r} 6 \\ +5 \\ \hline 11 \end{array}$ | $\begin{array}{r} 6 \\ +6 \\ \hline 12 \end{array}$ | $\begin{array}{r} 6 \\ +7 \\ \hline 13 \end{array}$ | $\begin{array}{r} 6 \\ +8 \\ \hline 14 \end{array}$ | $\begin{array}{r} 6 \\ +9 \\ \hline 15 \end{array}$ |
| $\begin{array}{r} 7 \\ +1 \\ \hline 8 \end{array}$ | $\begin{array}{r} 7 \\ +2 \\ \hline 9 \end{array}$ | $\begin{array}{r} 7 \\ +3 \\ \hline 10 \end{array}$ | $\begin{array}{r} 7 \\ +4 \\ \hline 11 \end{array}$ | $\begin{array}{r} 7 \\ +5 \\ \hline 12 \end{array}$ | $\begin{array}{r} 7 \\ +6 \\ \hline 13 \end{array}$ | $\begin{array}{r} 7 \\ +7 \\ \hline 14 \end{array}$ | $\begin{array}{r} 7 \\ +8 \\ \hline 15 \end{array}$ | $\begin{array}{r} 7 \\ +9 \\ \hline 16 \end{array}$ |
| $\begin{array}{r} 8 \\ +1 \\ \hline 9 \end{array}$ | $\begin{array}{r} 8 \\ +2 \\ \hline 10 \end{array}$ | $\begin{array}{r} 8 \\ +3 \\ \hline 11 \end{array}$ | $\begin{array}{r} 8 \\ +4 \\ \hline 12 \end{array}$ | $\begin{array}{r} 8 \\ +5 \\ \hline 13 \end{array}$ | $\begin{array}{r} 8 \\ +6 \\ \hline 14 \end{array}$ | $\begin{array}{r} 8 \\ +7 \\ \hline 15 \end{array}$ | $\begin{array}{r} 8 \\ +8 \\ \hline 16 \end{array}$ | $\begin{array}{r} 8 \\ +9 \\ \hline 17 \end{array}$ |
| $\begin{array}{r} 9 \\ +1 \\ \hline 10 \end{array}$ | $\begin{array}{r} 9 \\ +2 \\ \hline 11 \end{array}$ | $\begin{array}{r} 9 \\ +3 \\ \hline 12 \end{array}$ | $\begin{array}{r} 9 \\ +4 \\ \hline 13 \end{array}$ | $\begin{array}{r} 9 \\ +5 \\ \hline 14 \end{array}$ | $\begin{array}{r} 9 \\ +6 \\ \hline 15 \end{array}$ | $\begin{array}{r} 9 \\ +7 \\ \hline 16 \end{array}$ | $\begin{array}{r} 9 \\ +8 \\ \hline 17 \end{array}$ | $\begin{array}{r} 9 \\ +9 \\ \hline 18 \end{array}$ |

Finding Helpers for Addition Facts

Relationships [O]

You can get answers in many ways. When you do not know an addition fact, use a helper.

For each example below, some helpers are shown. Tell how to use each helper to find the sum.

1. $8 + 6 = ?$

HELPERS: (a) $6 + 8 = 14$ (or $14 - 6 = 8$ or $14 - 8 = 6$)

(b) $10 + 4 = 14$ (c) $7 + 7 = 14$

2. $4 + 3 = ?$

HELPERS: (a) $3 + 4 = 7$ (or $7 - 3 = 4$ or $7 - 4 = 3$)

(b) $3 + 3 = 6$ (or $4 + 4 = 8$) (c) $4 + 2 = 6$

3. $6 + 4 = ?$

HELPERS: (a) $4 + 6 = 10$ (or $10 - 4 = 6$ or $10 - 6 = 4$)

(b) $5 + 5 = 10$ (c) $6 + 3 = 9$

4. $9 + 3 = ?$

HELPERS: (a) $3 + 9 = 12$ (or $12 - 3 = 9$ or $12 - 9 = 3$)

(b) $10 + 2 = 12$ (c) $9 + 2 = 11$

Whole-Story Helper. To find any addition fact, you can use some other fact in its whole story.

10 Helper. To find any fact with a sum over 10, you can make the larger number to be added a 10 by taking some from the smaller number.

Doubles Helper. To find a fact when the numbers to be added are nearly equal, use a double.

Up-or-Down Helper. To find an addition fact, you can go up or down from a fact you know.

Using Helpers for Addition

Relationships [O]

Explain why each of these sums is correct:

| | | | | |
|---|--|---|---|---|
| 1. 5 | 2. 30 | 3. 20 | 4. 74 | 5. 40 |
| $\begin{array}{r} +40 \\ \hline 45 \end{array}$ | $\begin{array}{r} +6 \\ \hline 36 \end{array}$ | $\begin{array}{r} +30 \\ \hline 50 \end{array}$ | $\begin{array}{r} +20 \\ \hline 94 \end{array}$ | $\begin{array}{r} +27 \\ \hline 67 \end{array}$ |

Some boys and girls used these helpers to find sums. Tell what they did.

| Example | Helper |
|----------------|---------------|
| 6. $9 + 6 = ?$ | $10 + 6 = 16$ |
| 7. $5 + 2 = ?$ | $4 + 2 = 6$ |
| 8. $7 + 7 = ?$ | $6 + 6 = 12$ |
| 9. $8 + 9 = ?$ | $8 + 7 = 15$ |

Say these sums. Tell what helpers you could use if you did not know a sum.

| | a | b | c | d | e | f | g | h | i |
|-----|--|--|--|--|--|--|--|--|--|
| 10. | $\begin{array}{r} 5 \\ +1 \\ \hline \end{array}$ | $\begin{array}{r} 3 \\ +2 \\ \hline \end{array}$ | $\begin{array}{r} 1 \\ +9 \\ \hline \end{array}$ | $\begin{array}{r} 2 \\ +2 \\ \hline \end{array}$ | $\begin{array}{r} 5 \\ +6 \\ \hline \end{array}$ | $\begin{array}{r} 5 \\ +3 \\ \hline \end{array}$ | $\begin{array}{r} 2 \\ +8 \\ \hline \end{array}$ | $\begin{array}{r} 3 \\ +6 \\ \hline \end{array}$ | $\begin{array}{r} 5 \\ +8 \\ \hline \end{array}$ |
| 11. | $\begin{array}{r} 2 \\ +7 \\ \hline \end{array}$ | $\begin{array}{r} 6 \\ +7 \\ \hline \end{array}$ | $\begin{array}{r} 1 \\ +6 \\ \hline \end{array}$ | $\begin{array}{r} 9 \\ +2 \\ \hline \end{array}$ | $\begin{array}{r} 2 \\ +4 \\ \hline \end{array}$ | $\begin{array}{r} 2 \\ +3 \\ \hline \end{array}$ | $\begin{array}{r} 6 \\ +2 \\ \hline \end{array}$ | $\begin{array}{r} 8 \\ +5 \\ \hline \end{array}$ | $\begin{array}{r} 5 \\ +9 \\ \hline \end{array}$ |
| 12. | $\begin{array}{r} 9 \\ +4 \\ \hline \end{array}$ | $\begin{array}{r} 8 \\ +8 \\ \hline \end{array}$ | $\begin{array}{r} 4 \\ +3 \\ \hline \end{array}$ | $\begin{array}{r} 5 \\ +4 \\ \hline \end{array}$ | $\begin{array}{r} 7 \\ +8 \\ \hline \end{array}$ | $\begin{array}{r} 4 \\ +9 \\ \hline \end{array}$ | $\begin{array}{r} 7 \\ +9 \\ \hline \end{array}$ | $\begin{array}{r} 4 \\ +5 \\ \hline \end{array}$ | $\begin{array}{r} 8 \\ +2 \\ \hline \end{array}$ |
| 13. | $\begin{array}{r} 9 \\ +5 \\ \hline \end{array}$ | $\begin{array}{r} 2 \\ +6 \\ \hline \end{array}$ | $\begin{array}{r} 6 \\ +8 \\ \hline \end{array}$ | $\begin{array}{r} 6 \\ +6 \\ \hline \end{array}$ | $\begin{array}{r} 9 \\ +7 \\ \hline \end{array}$ | $\begin{array}{r} 6 \\ +5 \\ \hline \end{array}$ | $\begin{array}{r} 8 \\ +7 \\ \hline \end{array}$ | $\begin{array}{r} 9 \\ +8 \\ \hline \end{array}$ | $\begin{array}{r} 7 \\ +7 \\ \hline \end{array}$ |

It is better to remember a fact than to get the answer by using a helper. Always try hard to remember.



A New Look at Subtraction

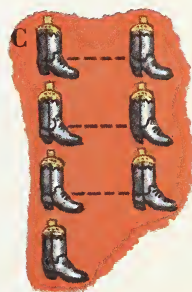
Review [0]

1. Can you take away a **group of like-things** from a larger group of like-things? Use picture A to explain.

2. Numbers stand for groups of like-things. May we take away, or subtract, numbers?

A number minus one of its two parts equals the other part.

3. Is the answer for picture B a **remainder** or a **difference**? What is it for picture C?



When you subtract a number, the answer is sometimes a remainder and sometimes a difference.

4. What is left when an equal number is subtracted? What is left when zero is subtracted?

5. $7 - 4 = 3$, $6 - 6 = 0$, $12 - 5 = 7$ are called **subtraction facts**. In a subtraction fact, the answer and the number subtracted are 1-place numbers.

See if you know the subtraction facts on page 132.

The 81 Subtraction Facts

| | | | | | | | | |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| $\frac{-1}{1}$ | $\frac{-1}{2}$ | $\frac{-1}{3}$ | $\frac{-1}{4}$ | $\frac{-1}{5}$ | $\frac{-1}{6}$ | $\frac{-1}{7}$ | $\frac{-1}{8}$ | $\frac{-1}{9}$ |
| 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| $\frac{-2}{1}$ | $\frac{-2}{2}$ | $\frac{-2}{3}$ | $\frac{-2}{4}$ | $\frac{-2}{5}$ | $\frac{-2}{6}$ | $\frac{-2}{7}$ | $\frac{-2}{8}$ | $\frac{-2}{9}$ |
| 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| $\frac{-3}{1}$ | $\frac{-3}{2}$ | $\frac{-3}{3}$ | $\frac{-3}{4}$ | $\frac{-3}{5}$ | $\frac{-3}{6}$ | $\frac{-3}{7}$ | $\frac{-3}{8}$ | $\frac{-3}{9}$ |
| 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| $\frac{-4}{1}$ | $\frac{-4}{2}$ | $\frac{-4}{3}$ | $\frac{-4}{4}$ | $\frac{-4}{5}$ | $\frac{-4}{6}$ | $\frac{-4}{7}$ | $\frac{-4}{8}$ | $\frac{-4}{9}$ |
| 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| $\frac{-5}{1}$ | $\frac{-5}{2}$ | $\frac{-5}{3}$ | $\frac{-5}{4}$ | $\frac{-5}{5}$ | $\frac{-5}{6}$ | $\frac{-5}{7}$ | $\frac{-5}{8}$ | $\frac{-5}{9}$ |
| 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| $\frac{-6}{1}$ | $\frac{-6}{2}$ | $\frac{-6}{3}$ | $\frac{-6}{4}$ | $\frac{-6}{5}$ | $\frac{-6}{6}$ | $\frac{-6}{7}$ | $\frac{-6}{8}$ | $\frac{-6}{9}$ |
| 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| $\frac{-7}{1}$ | $\frac{-7}{2}$ | $\frac{-7}{3}$ | $\frac{-7}{4}$ | $\frac{-7}{5}$ | $\frac{-7}{6}$ | $\frac{-7}{7}$ | $\frac{-7}{8}$ | $\frac{-7}{9}$ |
| 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| $\frac{-8}{1}$ | $\frac{-8}{2}$ | $\frac{-8}{3}$ | $\frac{-8}{4}$ | $\frac{-8}{5}$ | $\frac{-8}{6}$ | $\frac{-8}{7}$ | $\frac{-8}{8}$ | $\frac{-8}{9}$ |
| 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| $\frac{-9}{1}$ | $\frac{-9}{2}$ | $\frac{-9}{3}$ | $\frac{-9}{4}$ | $\frac{-9}{5}$ | $\frac{-9}{6}$ | $\frac{-9}{7}$ | $\frac{-9}{8}$ | $\frac{-9}{9}$ |

Finding Helpers for Subtraction Facts

Relationships [O]

For each example below, study the helper you can use to find the remainder.

1. $9 - 5 = ?$

HELPER: $9 - 4 = 5$

(or you could use $5 + 4 = 9$ or $4 + 5 = 9$)

Whole-Story Helper. To find any subtraction fact, you can always use some other fact from its whole story.

2. $17 - 9 = ?$

HELPER: $18 - 9 = 9$, so $17 - 9 = 8$

Doubles Helper. To find a subtraction fact which is almost like a double, you can use the double.

What other helper could you use?

3. $15 - 8 = ?$

HELPER: $15 = 10$ and 5 ones. Subtract 8 from the 10: $10 - 8 = 2$. The remainder is 2 ones. Then these 2 ones + the other 5 ones = 7 ones, so $15 - 8 = 7$.

10 Helper. To find a subtraction fact when the number to be subtracted from is larger than 10, first think of that number as 10 and some ones. Subtract from the 10 and add the ones to that remainder.

What other helpers could you use?

Remember: It is good to be able to know how to use helpers if you need to, but it is better to know the facts without helpers.

Practice on Subtraction Facts

[O]

Tell one or more helpers for each of these facts:

| | a | b | c | d | e | f | g | h | i |
|----|---|---|---|---|---|---|---|---|--|
| 1. | $\begin{array}{r} 7 \\ -6 \\ \hline \end{array}$ | $\begin{array}{r} 9 \\ -2 \\ \hline \end{array}$ | $\begin{array}{r} 11 \\ -9 \\ \hline \end{array}$ | $\begin{array}{r} 14 \\ -7 \\ \hline \end{array}$ | $\begin{array}{r} 8 \\ -5 \\ \hline \end{array}$ | $\begin{array}{r} 9 \\ -8 \\ \hline \end{array}$ | $\begin{array}{r} 9 \\ -3 \\ \hline \end{array}$ | $\begin{array}{r} 17 \\ -9 \\ \hline \end{array}$ | $\begin{array}{r} 7 \\ -2 \\ \hline \end{array}$ |
| 2. | $\begin{array}{r} 12 \\ -6 \\ \hline \end{array}$ | $\begin{array}{r} 15 \\ -9 \\ \hline \end{array}$ | $\begin{array}{r} 9 \\ -1 \\ \hline \end{array}$ | $\begin{array}{r} 10 \\ -3 \\ \hline \end{array}$ | $\begin{array}{r} 7 \\ -3 \\ \hline \end{array}$ | $\begin{array}{r} 15 \\ -7 \\ \hline \end{array}$ | $\begin{array}{r} 18 \\ -9 \\ \hline \end{array}$ | $\begin{array}{r} 8 \\ -2 \\ \hline \end{array}$ | $\begin{array}{r} 5 \\ -1 \\ \hline \end{array}$ |
| 3. | $\begin{array}{r} 10 \\ -5 \\ \hline \end{array}$ | $\begin{array}{r} 13 \\ -9 \\ \hline \end{array}$ | $\begin{array}{r} 10 \\ -9 \\ \hline \end{array}$ | $\begin{array}{r} 11 \\ -2 \\ \hline \end{array}$ | $\begin{array}{r} 16 \\ -8 \\ \hline \end{array}$ | $\begin{array}{r} 7 \\ -1 \\ \hline \end{array}$ | $\begin{array}{r} 8 \\ -7 \\ \hline \end{array}$ | $\begin{array}{r} 14 \\ -9 \\ \hline \end{array}$ | $\begin{array}{r} 6 \\ -6 \\ \hline \end{array}$ |

Now say the remainders. Use helpers if you need to.

The School Play

Writing A. and S. questions for problems [W]

Copy each problem. Write a question to finish it.

Then find the answer.

A. at the end means to write an addition question.

S. means to write a subtraction question.

1. In the school play there will be 5 girls, 4 boys, and 2 older people. **A.**

2. Joe is to be on the stage 7 times and Bob, 5 times. **S.**

3. Betty's ribbon costs 18¢. Betty has only 8¢. **S.**

4. In practice one day the boys made 8 mistakes and the girls made 10 mistakes. **A.**

5. The stage lights have 12 bulbs. 3 of the 12 bulbs are no longer good. **S.**

Do You Know?

Progress Test 11 [W]

Write answers on folded paper for rows 1 to 4.

| | a | b | c | d | e | f | g | h | i |
|----|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 1. | 6 | 7 | 3 | 4 | 7 | 4 | 5 | 8 | 6 |
| | <u>+8</u> | <u>+9</u> | <u>+8</u> | <u>+9</u> | <u>+5</u> | <u>+8</u> | <u>+6</u> | <u>+7</u> | <u>+9</u> |
| 2. | 9 | 7 | 5 | 9 | 9 | 8 | 4 | 9 | 6 |
| | <u>+6</u> | <u>+7</u> | <u>+8</u> | <u>+2</u> | <u>+5</u> | <u>+8</u> | <u>+7</u> | <u>+4</u> | <u>+7</u> |
| 3. | 9 | 7 | 8 | 9 | 5 | 3 | 8 | 7 | 9 |
| | <u>+3</u> | <u>+6</u> | <u>+3</u> | <u>+9</u> | <u>+7</u> | <u>+9</u> | <u>+6</u> | <u>+4</u> | <u>+8</u> |
| 4. | 8 | 6 | 5 | 8 | 7 | 2 | 8 | 9 | 6 |
| | <u>+9</u> | <u>+6</u> | <u>+9</u> | <u>+4</u> | <u>+8</u> | <u>+9</u> | <u>+5</u> | <u>+7</u> | <u>+5</u> |

Copy in columns and write answers for Ex. 5 to 8.

5. $22 + 0 + 4 = ?$

7. $2 + 6 + 8 = ?$

6. $7 + 5 + 5 = ?$

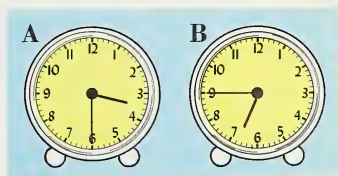
8. $4 + 8 + 3 = ?$

Write the whole stories in A. and S. about

9. 7, 9, and 16. 10. 9, 9, and 18. 11. 6, 8, and 14.

Write the time shown on

12. clock A. 13. clock B.



Write the money number

14. for 2 dollars and 16 cents.

16. for 52 cents.

15. for 5 dollars and 7 cents.

17. for 8 cents.

Make study cards for facts missed in rows 1 to 4.



Adding Four Numbers

C

$$\begin{array}{r} 2 \\ 1 \\ 5 \\ +4 \\ \hline 12 \end{array}$$

Column A.; 4 addends [O]

Pictures A and B. To find how many fish they caught in all, the boys put the groups together and counted the fish. A quicker way is to find the total by adding, as in box C.

To add, look at 2 and 1 and *think*, "3." Remembering 3, look at 5 and *think*, "8." Remembering 8, look at 4 and *think*, "12." The total is 12.

Tell how the sums were found in row 1.

| | a | b | c | d | e | f | g | h |
|----|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|
| 1. | 3 | 2 | 21 | 5 | 6 | 4 | 3¢ | 2¢ |
| | 5 | 5 | 3 | 7 | 7 | 0 | 7¢ | 7¢ |
| | 2 | 2 | 2 | 0 | 2 | 5 | 1¢ | 3¢ |
| | <u>+3</u> | <u>+8</u> | <u>+3</u> | <u>+4</u> | <u>+3</u> | <u>+6</u> | <u>+8¢</u> | <u>+2¢</u> |
| | 13 | 17 | 29 | 16 | 18 | 15 | 19¢ | 14¢ |

[W]

Copy and write the sums. Check by adding upward.

| | | | | | | | | |
|----|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|
| 2. | 30 | 6 | 9 | 2 | 9 | 5 | 21¢ | 13¢ |
| | 5 | 8 | 4 | 8 | 5 | 8 | 4¢ | 0 |
| | 1 | 0 | 0 | 5 | 3 | 1 | 0 | 2¢ |
| | <u>+2</u> | <u>+4</u> | <u>+6</u> | <u>+4</u> | <u>+1</u> | <u>+2</u> | <u>+2¢</u> | <u>+4¢</u> |

Copy the numbers in columns, and add.

- | | | |
|----------------|----------------|---------------------|
| 3. 7, 9, 0, 3 | 8. 40, 5, 1, 2 | 13. 4¢, 3¢, 8¢, 4¢ |
| 4. 0, 8, 7, 1 | 9. 9, 2, 2, 5 | 14. 5¢, 3¢, 6¢, 5¢ |
| 5. 11, 3, 1, 2 | 10. 2, 0, 9, 7 | 15. 32¢, 2¢, 2¢, 1¢ |
| 6. 2, 5, 0, 6 | 11. 2, 7, 0, 9 | 16. 23¢, 1¢, 3¢, 2¢ |
| 7. 7, 5, 3, 2 | 12. 1, 7, 0, 9 | 17. 3¢, 3¢, 2¢, 8¢ |

► **Extra Practice.** Work Sets 25 and 26.

Do You Know?

Progress Test 12 [W]

Use folded paper. Write the remainders.

- | | a | b | c | d | e | f | g | h | i |
|----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 1. | 15 <u>-7</u> | 16 <u>-8</u> | 11 <u>-6</u> | 14 <u>-7</u> | 17 <u>-9</u> | 15 <u>-8</u> | 12 <u>-4</u> | 13 <u>-6</u> | 14 <u>-5</u> |
| 2. | 12 <u>-5</u> | 13 <u>-7</u> | 15 <u>-6</u> | 13 <u>-4</u> | 11 <u>-3</u> | 13 <u>-9</u> | 14 <u>-8</u> | 11 <u>-5</u> | 16 <u>-9</u> |
| 3. | 12 <u>-8</u> | 18 <u>-9</u> | 11 <u>-4</u> | 12 <u>-9</u> | 16 <u>-7</u> | 11 <u>-9</u> | 13 <u>-5</u> | 14 <u>-6</u> | 12 <u>-7</u> |
| 4. | 13 <u>-8</u> | 11 <u>-7</u> | 14 <u>-9</u> | 11 <u>-8</u> | 12 <u>-6</u> | 11 <u>-2</u> | 17 <u>-8</u> | 12 <u>-3</u> | 15 <u>-9</u> |

Make study cards as needed. Use page 132.

Oral Practice

- | | |
|----------------------|-----------------------|
| 1. 16 minus 3 = ? | 4. 44 plus 4 = ? |
| 2. 9 + 3 + 2 + 0 = ? | 5. 6 + 3 + 5 + 3 = ? |
| 3. 21 + 2 + 3 = ? | 6. 32 + 2 + 0 + 3 = ? |

(one hundred thirty-seven) **137**

Do You Understand?

Test of Information and Meaning 3

Write answers for these examples:

1. What is the dot in \$4.97 called?
2. To find how much smaller 7 is than 19, what should you do?
3. Write two examples in the $7 - 5$ family.
4. To check addition, what should you do?
5. Can you subtract tens from ones?
6. $7 \text{ plates} + 6 \text{ cups} = 7 \text{ } _? _ + 6 \text{ } _? _.$
7. How many inches make a foot?
8. If you take away all of a group, how much is left?
9. Draw a ϕ -picture for $54 + 14$.
10. Write two examples in the $3 + 6$ family.
11. Write a naming number which shows order.
12. To check work in subtraction, you may add the remainder to what other number?
13. If you subtract 10, does the one's figure change?
14. Write a three-place number.
15. $2 + 3 + 4 = 9$, so $4 + 2 + 3 = ?$
16. Write an example in which one two-place number is subtracted from another two-place number.

Write the money number for

17. nineteen cents. 18. 3 dollars and 6 cents.

Write the name of the coin that is worth

19. 50¢. 20. 25¢. 21. 10¢.



Can You Work Problems?

Problem Test 3

Write the work for these problems:

1. To get money to buy things for our room, Tom sold 26 papers last week and Bob sold 15. Tom sold how many more papers last week than Bob?

2. Twenty-two of our 35 chairs had to be painted. How many chairs needed no paint?

3. Paint for a table cost 27¢. Paint for a chair cost 12¢. Which paint cost more? How much more?

4. Paint for the table and the chair together cost how much? (Use the numbers in Ex. 3.)

5. Nan brought us 10 pictures, and Sue brought 8. Together they brought how many pictures?

6. We had 18 feet of cloth for our curtains. Two feet were left over. We had used how many feet of cloth?

7. It took 12 nails to put up one curtain and 10 nails to put up another. For the two curtains, how many nails were needed?

Do You Make Mistakes?

Diagnostic Test 3

Write answers on folded paper. Check carefully.

| | a | b | c | d | e | Study Pages | Practice Sets |
|----|---------------------------|--------------------------|---------------------------|--------------------------|------------------------------|-----------------|---------------|
| 1. | 5 8 <u>+6</u> | 2 9 <u>+8</u> | 6 5 <u>+7</u> | 2 8 <u>+9</u> | 3¢ 9¢ <u>+6¢</u> | 100-101 | 17 |
| 2. | 60 <u>+7</u> | 8 <u>+50</u> | 69 <u>-9</u> | 48 <u>-8</u> | 56¢ <u>-6¢</u> | 102, 116 | 18, 21 |
| 3. | 50 3 1 <u>+4</u> | 9 3 4 <u>+2</u> | 31 6 0 <u>+2</u> | 8 3 3 <u>+5</u> | 4¢ 2¢ 7¢ <u>+4¢</u> | 136 | 25, 26 |
| 4. | 30 <u>+50</u> | 54 <u>+23</u> | 55 <u>+30</u> | 60 <u>+38</u> | 42¢ <u>+33¢</u> | 105-107 | 19, 20, 24 |
| 5. | 80 <u>-60</u> | 98 <u>-53</u> | 67 <u>-27</u> | 79 <u>-20</u> | 85¢ <u>-84¢</u> | 117-118, 120 | 22, 23, 24 |

Be sure to read the Study Pages carefully before you do the work on the Practice Sets. The Study Pages will help you find why you made your mistakes.

Writing Problems

Problem-solving helps

Write in words subtraction problems for Ex. 1 to 7.
Then work the problems.

1. 59¢, 7¢ (difference problem).
2. 48 bags, 6 used (number-left problem).
3. 16 curtains, 4 curtains clean (other-part problem).
4. 27 apples, 7 left (number-gone problem).
5. 17 red roses, 9 pink roses (difference problem).
6. 25 stories, all but 5 of them are new (other-part problem).
7. 5¢ in pocket, 29¢ needed (other-part problem).

How Well Can You Figure?

Computation Test 3

After the test on page 140, you studied the things that were hard for you. Now take the test below. Copy the examples. Add or subtract and check. Watch the signs!

- | | | | | |
|--|---|--|--|--|
| 1. $\begin{array}{r} 39 \\ -23 \\ \hline \end{array}$ | 2. $\begin{array}{r} 47 \\ -34 \\ \hline \end{array}$ | 3. $\begin{array}{r} 52 \\ +40 \\ \hline \end{array}$ | 4. $\begin{array}{r} 89 \\ -34 \\ \hline \end{array}$ | 5. $\begin{array}{r} 58¢ \\ -8¢ \\ \hline \end{array}$ |
| 6. $\begin{array}{r} 70 \\ -50 \\ \hline \end{array}$ | 7. $\begin{array}{r} 70 \\ +18 \\ \hline \end{array}$ | 8. $\begin{array}{r} 64 \\ -44 \\ \hline \end{array}$ | 9. $\begin{array}{r} 51 \\ +7 \\ \hline \end{array}$ | 10. $\begin{array}{r} 57¢ \\ -56¢ \\ \hline \end{array}$ |
| 11. $\begin{array}{r} 25 \\ +63 \\ \hline \end{array}$ | 12. $\begin{array}{r} 26 \\ -6 \\ \hline \end{array}$ | 13. $\begin{array}{r} 30 \\ +50 \\ \hline \end{array}$ | 14. $\begin{array}{r} 85 \\ -60 \\ \hline \end{array}$ | 15. $\begin{array}{r} 62¢ \\ -52¢ \\ \hline \end{array}$ |
| 16. $1+4+9+5$ | 18. $2+4+9+2$ | 20. $20¢+4¢+2¢+2¢$ | | |
| 17. $9+0+7+1$ | 19. $6+3+8+0$ | 21. $31¢+6¢+0+2¢$ | | |



Weighing Things

Measures [O]

Ann is playing store. Ann's mother plays she is buying 5 pounds of apples from Ann.

1. What does Ann use to weigh the apples?
2. Can you tell from the picture if Ann has weighed too many apples or too few? How?
3. Find a book which weighs about a **pound**. Find some other things in the room that weigh about a pound.
4. Name four things that are sold by the pound.
5. How many pounds do you weigh?
6. Guess how much three other children weigh. Then ask them to see if you made a good guess.

Things weighing less than a pound weigh only **ounces**. We can carry such things easily. It takes 16 ounces to make a pound.

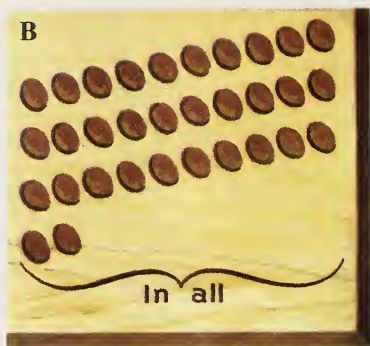
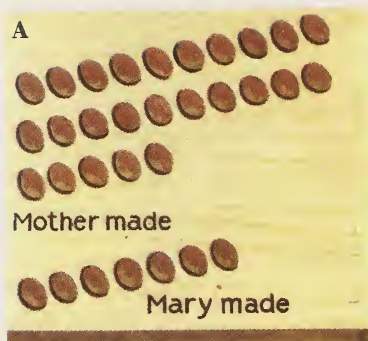
7. Which things weigh a pound or more?

| | | | |
|-------|---------|---------------|-----------|
| a dog | a ruler | a candy egg | an orange |
| a cup | a table | a big pumpkin | a knife |

16 ounces (oz.) = 1 pound (lb.) 1 lb. = 16 oz.

Say the missing word: pounds or ounces.

8. The doll weighs 25 _?_.
9. The baby's shoes weigh 10 _?_.
10. The morning paper weighs 5 _?_.
11. Mrs. Burns carried home 10 _?_ of potatoes.
12. Joe's bicycle weighs 30 _?_.
13. Mary now weighs about 50 _?_.



Cookies for the Picnic

Higher-decade A. with carrying [O]

1. Picture A. Mother's cookies made how many tens and ones? Mary's made how many ones?

2. To find how many in all, Mary made as many tens as she could (picture B), instead of counting by ones. How many cookies were there for the picnic?

3. Instead of counting, Bill added first ones, then tens, as in box C. Explain the sum, "2 tens and 12 ones."

But Bill knew that 12 ones = 1 ten and 2 ones. So he **changed the groups** from 2 tens and 12 ones to 3 tens and 2 ones. In this way, he **carried 1 ten**.

| C | D |
|---|--|
| $ \begin{array}{r} 2 \text{ tens and } 5 \text{ ones} \\ + \quad \quad \quad 7 \text{ ones} \\ \hline 2 \text{ tens and } 12 \text{ ones,} \\ \text{or } 3 \text{ tens and } 2 \text{ ones, or } 32 \end{array} $ | $ \begin{array}{r} \\ 25 \\ + 7 \\ \hline 32 \end{array} $ |

4. Mother said, "Using figures is the shortest way." On Bill's paper, she added as in box D.

How did Mother show the ten which she carried?

5. Mother brought out two jars of candy balls. She said that one jar had 9 balls in it and the other, 36. The children all said, “Let’s add these!”

6. Bill added with tens and ones, as in box E. Tell how he finished his work.

7. Mary said, "I'll add the way Mother showed us." Tell how Mary added (as in box F).

| | |
|--|--|
| <p>E</p> <div style="text-align: right; margin-bottom: 10px;"> 9 ones + 3 tens and 6 ones <hr style="width: 100%;"/> ? and ? , or - ? - </div> | <p>F</p> <div style="text-align: right; margin-bottom: 10px;"> ¹ 9 + 36 <hr style="width: 100%;"/> ? </div> |
|--|--|

[W]

Copy Ex. 8 to 22. Find the sums two ways: by tens and ones; and with figures.

8. $32 + 9$

13. $64 \div 8$

18. $56 \div 7$

9. $43 + 8$

14. $38 + 7$

19. $67 + 8$

10. $25 + 6$

15. $56 + 8$

20. $46 + 9$

11. $53 + 9$

16. $48 \div 6$

21. $79 + 8$

12. $36 \div 5$

17. $75 + 8$

22. $84 + 9$

23. In each of Ex. 8 to 22 you carry a ten. Why?

You carry when the sum of the ones is 10 or more.



New Addition Families

Higher-decade A. with bridging [O]

1. In each example in box A the numbers in one's place are $_?$ and $_?$.

| |
|--|
| A |
| $13 \quad 23 \quad 33 \quad 43 \quad 53$ $\underline{+8} \quad \underline{+8} \quad \underline{+8} \quad \underline{+8} \quad \underline{+8}$ |

2. Each example is part of what family?

3. Say 3 other examples in the same family.

| |
|--|
| B |
| $35 \quad 5 \quad 25 \quad 5 \quad 5$ $\underline{+7} \quad \underline{+57} \quad \underline{+7} \quad \underline{+87} \quad \underline{+47}$ |

4. The examples in box B are parts of what family?

5. Say 3 other examples in the $5 + 7$ family.

6. For $35 + 7$, the sum of the ones is 12, or 1 ten and 2 ones. Because the sum of the ones is more than 9, **the ten's figure in the sum will be 1 more.** What is it?

7. To add $35 + 7$, *think*, "12" (for the ones, $5 + 7$), then *think*, "42."

8. Tell the ten's figures in the sums in box B.

9. To add $5 + 57$, *think*, "12, 62." Explain.

10. Tell what to think in the other examples in box B.

11. Now say the sums this way in box A.

Say the ten's figures in these sums, then the sums:

| | a | b | c | d | e | f | g |
|-----|-------------------|------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| 12. | 28 | 36 | 9 | 5 | 4 | 27 | 48 |
| | $\underline{+5}$ | $\underline{+7}$ | $\underline{+13}$ | $\underline{+25}$ | $\underline{+37}$ | $\underline{+7}$ | $\underline{+7}$ |
| 13. | 8 | 78 | 6 | 83 | 74 | 9 | 7 |
| | $\underline{+39}$ | $\underline{+8}$ | $\underline{+68}$ | $\underline{+9}$ | $\underline{+6}$ | $\underline{+89}$ | $\underline{+53}$ |

Write 4 examples in the family for each of these:

14. $3 + 8$

16. $9 + 6$

18. $7 + 8$

15. $2 + 9$

17. $5 + 7$

19. $4 + 9$

Write the family in which Ex. 20 is a part. Do the same for each of Ex. 21 and 22.

20. $36 + 9$

21. $5 + 27$

22. $23 + 8$

Copy Ex. 23 to 42 and write the sums. For Ex. 23, *think*, “15, 45,” and write “45” as the sum.

| | | | | |
|----------|----------|----------|----------|-----------|
| 23. 36 | 27. 26 | 31. 39 | 35. 42 | 39. $58¢$ |
| $+9$ | $+8$ | $+7$ | $+9$ | $+4¢$ |

| | | | | |
|---------|---------|---------|---------|----------|
| 24. 8 | 28. 9 | 32. 7 | 36. 8 | 40. $9¢$ |
| $+19$ | $+41$ | $+26$ | $+67$ | $+15¢$ |

| | | | | |
|---------|----------|----------|---------|----------|
| 25. 8 | 29. 59 | 33. 85 | 37. 9 | 41. $1¢$ |
| $+38$ | $+8$ | $+7$ | $+72$ | $+29¢$ |

| | | | | |
|----------|---------|---------|----------|----------|
| 26. 63 | 30. 7 | 34. 9 | 38. 34 | 42. $5¢$ |
| $+7$ | $+14$ | $+42$ | $+8$ | $+85¢$ |

Tom is 12 years old. His mother is 34. His father is 41. How old will each be in 9 years? See Ex. 43 to 45.

Copy and find these sums:

| | | |
|----------|----------|----------|
| 43. 12 | 44. 34 | 45. 41 |
| $+9$ | $+9$ | $+9$ |

46. Sue's money is shown in picture A. Ann's money is shown in picture B. Does Sue have as much money as Ann?





A Quicker Way to Add

Higher-decade A. with bridging [O]

The shoemaker has finished 24 shoes. He has 8 more to finish. In all, he has how many shoes?

1. This example is part of the $-?- + -?-$ family.

2. Because the sum of $4 + 8$ is more than 9, you know that the ten's figure in the sum will be one more. So, for $24 + 8$, the ten's figure will be $-?-$.

3. To add 24 and 8 *think*, "12, $-?-$." But there is a quicker way. Just **look at 24 and 8** and *think*, "32."

In Ex. 4, at the right, look at the numbers 37 and 9, and *think*, " $-?-$."

$$\begin{array}{r} 4. \quad 37 \\ + 9 \\ \hline ? \end{array}$$

On page 147, tell the sums in Ex. 23 to 42.

[W]

Write sums for these the quick way:

| a | b | c | d | e |
|-------------|----------|----------|----------|----------|
| 5. $19 + 6$ | $3 + 18$ | $28 + 6$ | $47 + 8$ | $59 + 4$ |
| 6. $8 + 32$ | $49 + 8$ | $69 + 9$ | $88 + 4$ | $28 + 7$ |
| 7. $57 + 5$ | $6 + 19$ | $3 + 57$ | $19 + 7$ | $34 + 9$ |
| 8. $5 + 48$ | $79 + 2$ | $7 + 13$ | $68 + 8$ | $77 + 6$ |

► **Extra Practice.** Work Sets 27 and 28.

Practice in Using Addition Families

[W]

In all examples in an addition family, the one's figures in the sums are the same.

When the sum of the ones is more than 9, the ten's figure in the sum is 1 more.

Write sums on folded paper. For money numbers, be sure to write the sums with \$ sign and cent point.

| | a | b | c | d | e | f | g |
|----|------------|------------|------------|------------|------------|------------|--------------|
| 1. | 22 | 59 | 60 | 6 | 68 | 2 | \$0.69 |
| | <u>+7</u> | <u>+8</u> | <u>+9</u> | <u>+19</u> | <u>+7</u> | <u>+54</u> | <u>+0.04</u> |
| 2. | 57 | 43 | 8 | 9 | 2 | 21 | \$0.85 |
| | <u>+8</u> | <u>+5</u> | <u>+44</u> | <u>+72</u> | <u>+35</u> | <u>+9</u> | <u>+0.04</u> |
| 3. | 8 | 26 | 46 | 13 | 8 | 7 | \$0.17 |
| | <u>+75</u> | <u>+3</u> | <u>+8</u> | <u>+6</u> | <u>+12</u> | <u>+50</u> | <u>+0.09</u> |
| 4. | 4 | 7 | 50 | 9 | 36 | 28 | \$0.06 |
| | <u>+74</u> | <u>+34</u> | <u>+8</u> | <u>+86</u> | <u>+2</u> | <u>+3</u> | <u>+0.47</u> |

What Is **n**? No Pencils, Please!

| | | | | | [O] | | | | |
|-----|-------------------|----|------------------|----|-----------------|----------------------|------------------|-----|------------------|
| 1. | 33 | 2. | 78 | 3. | 45 | 4. | 37 | 5. | n |
| | $\frac{+n}{41}$ | | $\frac{-n}{71}$ | | $\frac{+n}{52}$ | | $\frac{-n}{34}$ | | $\frac{+28}{37}$ |
| 6. | 59 | 7. | n | 8. | 84 | 9. | n | 10. | 29 |
| | $\frac{+n}{66}$ | | $\frac{+48}{57}$ | | $\frac{-n}{80}$ | | $\frac{+39}{47}$ | | $\frac{-n}{21}$ |
| 11. | $6 + n + 9 = 15$ | | | | 14. | $20 + 4 + n = 29$ | | | |
| 12. | $4 + 8 + n = 17$ | | | | 15. | $n + 6 + 7 + 4 = 19$ | | | |
| 13. | $22 + n + 4 = 33$ | | | | 16. | $9 + 9 + n = 27$ | | | |

Practice in Subtraction

[W]

Copy and write the remainders.

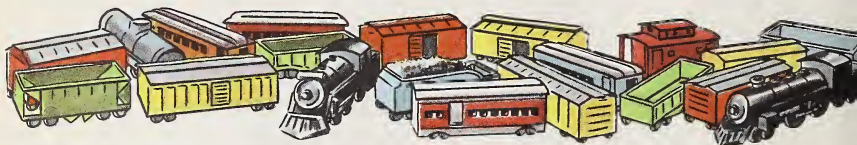
| | a | b | c | d | e | f | g |
|----|--|--|--|--|--|--|--|
| 1. | $\begin{array}{r} 78 \\ -8 \\ \hline \end{array}$ | $\begin{array}{r} 17 \\ -9 \\ \hline \end{array}$ | $\begin{array}{r} 67 \\ -50 \\ \hline \end{array}$ | $\begin{array}{r} 89 \\ -5 \\ \hline \end{array}$ | $\begin{array}{r} 14 \\ -5 \\ \hline \end{array}$ | $\begin{array}{r} 79 \\ -36 \\ \hline \end{array}$ | $\begin{array}{r} \$0.16 \\ -0.07 \\ \hline \end{array}$ |
| 2. | $\begin{array}{r} 13 \\ -6 \\ \hline \end{array}$ | $\begin{array}{r} 78 \\ -73 \\ \hline \end{array}$ | $\begin{array}{r} 79 \\ -50 \\ \hline \end{array}$ | $\begin{array}{r} 16 \\ -8 \\ \hline \end{array}$ | $\begin{array}{r} 58 \\ -46 \\ \hline \end{array}$ | $\begin{array}{r} 14 \\ -9 \\ \hline \end{array}$ | $\begin{array}{r} \$0.15 \\ -0.07 \\ \hline \end{array}$ |
| 3. | $\begin{array}{r} 16 \\ -9 \\ \hline \end{array}$ | $\begin{array}{r} 69 \\ -9 \\ \hline \end{array}$ | $\begin{array}{r} 14 \\ -8 \\ \hline \end{array}$ | $\begin{array}{r} 68 \\ -45 \\ \hline \end{array}$ | $\begin{array}{r} 29 \\ -7 \\ \hline \end{array}$ | $\begin{array}{r} 15 \\ -8 \\ \hline \end{array}$ | $\begin{array}{r} \$0.68 \\ -0.60 \\ \hline \end{array}$ |
| 4. | $\begin{array}{r} 79 \\ -44 \\ \hline \end{array}$ | $\begin{array}{r} 15 \\ -9 \\ \hline \end{array}$ | $\begin{array}{r} 69 \\ -26 \\ \hline \end{array}$ | $\begin{array}{r} 12 \\ -4 \\ \hline \end{array}$ | $\begin{array}{r} 17 \\ -8 \\ \hline \end{array}$ | $\begin{array}{r} 79 \\ -68 \\ \hline \end{array}$ | $\begin{array}{r} \$0.14 \\ -0.06 \\ \hline \end{array}$ |

Playing Train

[W]

Write the work for problems 1 to 4.

1. Bob has 2 engines and 18 cars. How many toys are there in all?
2. 8 of his 18 cars belong to one train and the others to a second train. How many belong to the second train?
3. Bob made a train with 10 cars and 2 engines. How many toys did he use?
4. Bob keeps 9 of the 18 toy cars in a box. How many toy cars does he keep in another box?



| | |
|-------|----|
| SOUP | 7¢ |
| MEAT | 9¢ |
| BEANS | 8¢ |
| ROLLS | 6¢ |
| PIE | 9¢ |
| MILK | 5¢ |



Eating Lunch at School

Using higher-decade addition with bridging [O]

1. Tom paid 8¢ for beans, 6¢ for rolls, and 9¢ for meat, or $______$ in all.

Use Tom's box. Look at 8 and 6. Think, "14." Look at 9. Think, "23." Tom paid 23¢.

| Tom | Dot |
|------------|-------------|
| 8¢ | 7¢ |
| 6¢ | 5¢ |
| + 9¢ | 9¢ |
| <u>23¢</u> | <u>+ 6¢</u> |
| | 27¢ |
| Nan | Joe |
| 4¢ | 8¢ |
| 6¢ | 6¢ |
| 8¢ | + 8¢ |
| + 9¢ | <u>22¢</u> |
| <u>27¢</u> | |

2. Dot had soup for 7¢, milk for 5¢, pie for 9¢, and rolls for 6¢. What did she pay? Think, "12, 21, 27; 27¢."

Check by adding upward. For Tom's lunch think, "15, 23; 23¢." For Dot's lunch think, "15, 20, 27; 27¢."

3. Tell what to think for Nan's and Joe's lunches.

[W]

Copy in columns. Add to find the totals. Check.

| a | b | c | d |
|---------------|------------|------------|----------------|
| 4. 8, 7, 5 | 5, 8, 7 | 7, 8, 8 | 9¢, 6¢, 6¢ |
| 5. 5, 9, 7 | 8, 7, 7 | 9, 5, 9 | 9¢, 7¢, 8¢ |
| 6. 5, 5, 7, 5 | 8, 5, 9, 5 | 7, 4, 6, 7 | 7¢, 9¢, 5¢, 5¢ |

► **Extra Practice.** Work Extra Practice Set 29.



Watch Out for the Tricky Words!

Language difficulties in problem-solving {O}

Some words in problems are tricky. You may think they tell you to add or to subtract when they do not. Watch the tricky words!

Read each problem all the way through. Find the story it tells. Then you will know if you must add or subtract. Do not work the problems.

Do the words **in all** in problems always mean that you must add? Study Ex. 1 and 2.

1. **In all**, there were 7 boys and 10 girls at Susan's party. There were how many children?

2. **In all**, there were 18 children at Ann's party. Six were boys. How many were girls?

Does **left** always mean to subtract? Study Ex. 3 and 4.

3. Tom took most of his marbles to play with. He **left** 8 marbles in one bag and 12 in another bag. How many marbles were **left** in the two bags?

4. Tom gave away 8 of his 58 marbles. How many marbles did he have **left**?

Does **together** always mean to add? See Ex. 5 and 6.

5. On Friday, Tom earned 14¢ and Joe earned 20¢. How much did they earn **together** on Friday?

6. Joe and Bill **together** earned 38¢. If Joe earned 22¢, how much did Bill earn?

Does **more** always mean to subtract? See Ex. 7 and 8.

7. Peg worked 8 problems. Then she did 6 **more** problems. How many problems did Peg work?

8. Jean worked 17 problems. That was 8 **more** than Ann did. How many problems did Ann work?

Does **gone** always mean to subtract? See Ex. 9 and 10.

9. Tom cannot find 8 of his old stamps and 8 of his new stamps. How many stamps are **gone**?

10. Rusty can find only 46 of his 48 pink stamps. How many pink stamps are **gone**?

[W]

Now work problems 1 to 10.

Practice in Adding

[W]

Copy in columns, add, and check.

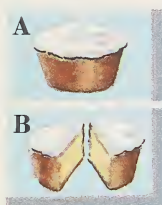
| a | b | c | d |
|---------------|-------------|-------------|-----------------|
| 1. 6, 8, 8 | 2, 4, 4, 6 | 9, 0, 9, 6 | 3¢, 7¢, 5¢, 7¢ |
| 2. 5, 8, 6, 7 | 6, 9, 6 | 2, 4, 6, 7 | 8¢, 0, 9¢, 6¢ |
| 3. 2, 0, 3, 8 | 20, 3, 0, 5 | 6, 7, 8, 4 | 10¢, 5¢, 1¢, 3¢ |
| 4. 7, 9, 4, 7 | 1, 6, 8, 3 | 30, 4, 0, 3 | 8¢, 3¢, 6¢, 5¢ |
| 5. 4, 9, 5, 6 | 3, 6, 4, 7 | 5, 9, 6, 3 | 50¢, 0, 6¢, 2¢ |

(one hundred fifty-three) **153**

Parts of Things (Fractions)

Equal parts of an object [O]

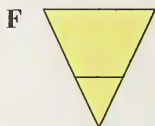
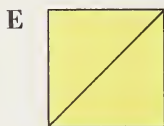
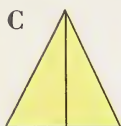
Mary cut her cake (A) into two parts of the same size.



Picture B shows the cake in two equal parts. Each part is one half ($\frac{1}{2}$).

A thing can be cut into two parts that are not equal in size. Then the parts are not halves.

1. Which pictures (C to F) show halves? Why?



2. Why are the two parts of circle D not halves of circle D?

3. If things are divided into four equal parts, each part is one fourth ($\frac{1}{4}$). The parts must be equal. Do G and H show fourths?

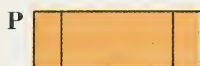
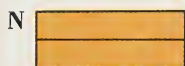
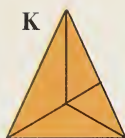


4. To get one third ($\frac{1}{3}$) of a thing, you divide it into -?- parts, and the parts must be -?- (I and J).

Numbers like 7, 3, and 9 are whole numbers.

Numbers like $\frac{1}{2}$, $\frac{1}{3}$, and $\frac{1}{4}$ are fractions.

5. Tell which of pictures K to S on page 155 show halves; thirds; fourths. Tell why.



Fraction of an object [W]

Make three **circles** like T.

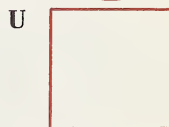


6. Color $\frac{1}{4}$ of the first circle red.

7. Color $\frac{1}{3}$ of the second, brown.

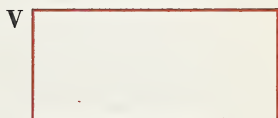
8. Color $\frac{1}{2}$ of the third, blue.

9. Draw two **squares** like U. Divide them into thirds in different ways.



10. Draw three more squares. Divide them into fourths in different ways.

11. Draw a **rectangle** like V. Divide it into thirds. Write " $\frac{1}{3}$ " on each part.



12. Draw another rectangle. Divide it into fourths. Write " $\frac{1}{4}$ " on each part.

13. Draw a circle. Divide it into halves. Write " $\frac{1}{2}$ " on each part.

14. Check your drawings. In each drawing, are the parts the same size?

Do You Know?

Progress Test 13 [W]

Write answers for Ex. 1 to 11.

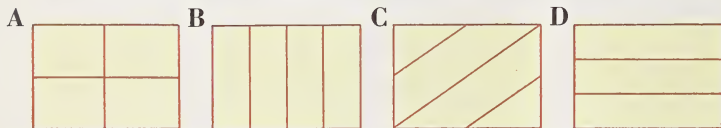
1. Copy the examples in which the answer must be smaller than the number at the top.

| a | b | c | d | e | f | g |
|------------|------------|------------|-----------|-----------|------------|------------|
| 8 | 48 | 30 | 77 | 35 | 68 | 70¢ |
| <u>+46</u> | <u>-32</u> | <u>+28</u> | <u>-7</u> | <u>+8</u> | <u>-57</u> | <u>+6¢</u> |

2. Copy any examples above in which you carry.

3. Copy any rectangles below that show fourths.

4. Copy any rectangle below that shows thirds.



5. Which things are easy to measure in inches?

house field crayon tall tree book

Write these sums of money in figures:

6. Two cents (2 ways) 7. Ten dollars and ten cents

8. Ann was 14th in line. How many children were ahead of her in line?

9. The clock shows quarter past 12. "Quarter" means " $\frac{1}{4}$." What part of the way around the clock face has the minute hand moved from 12 o'clock?



10. Does a turkey weigh a number of pounds or only a number of ounces?

11. With a ϕ -picture, check $8 + 46 = 54$.

To Keep in Practice

[W]

Copy and work the examples. Watch the signs!

| a | b | c | d | e |
|---------------------|------------------|------------------|------------------|--------------------|
| 1. 35 <u>+24</u> | 78 <u>-8</u> | 38 <u>+9</u> | 84 <u>-54</u> | 40¢ <u>+7¢</u> |
| 2. 79 <u>-57</u> | 43 <u>+35</u> | 85 <u>-60</u> | 46 <u>+53</u> | 56¢ <u>-6¢</u> |
| 3. 59 <u>-35</u> | 8 <u>+50</u> | 20 <u>+60</u> | 98 <u>-60</u> | 52¢ <u>+37¢</u> |
| 4. 55 <u>+8</u> | 80 <u>-30</u> | 7 <u>+89</u> | 39 <u>-34</u> | 30 <u>+40</u> |

► **Extra Practice.** Work Set 30.

Do You Know?

Progress Test 14 [W]

Write answers on folded paper.

| a | b | c | d | e | f | g |
|-----------------------------|--------------------------|--------------------------|---------------------------|--------------------------|---------------------------|------------------------------|
| 1. 65 <u>+23</u> | 79 <u>-9</u> | 36 <u>+9</u> | 46 <u>-35</u> | 9 <u>+58</u> | 64 <u>+5</u> | \$0.74 <u>+0.09</u> |
| 2. 57 <u>-30</u> | 27 <u>+8</u> | 79 <u>-8</u> | 43 <u>+36</u> | 7 <u>+69</u> | 58 <u>-55</u> | \$0.85 <u>+0.08</u> |
| 3. 32 <u>+8</u> | 87 <u>-55</u> | 3 <u>+49</u> | 58 <u>+7</u> | 78 <u>-46</u> | 8 <u>+40</u> | \$0.48 <u>-0.08</u> |
| 4. 8 9 6 <u>+3</u> | 6 7 4 <u>+4</u> | 6 8 8 <u>+7</u> | 12 0 3 <u>+4</u> | 5 9 7 <u>+6</u> | 10 3 0 <u>+5</u> | 2¢ 9¢ 9¢ <u>+6¢</u> |



At the Movies!

A. of two 2-place numbers with carrying [O]

1. The 19 children in Grade 3 and the 25 children in Grade 4 saw a movie. How many children saw the movie?

A



- Use Ⓣ 's and ⓞ 's to find the sum (box A).
- Explain how to use tens and ones, as in box B.

B

1 ten and 9 ones
 $+ 2$ tens and 5 ones

 3 tens and 14 ones,
 or 4 tens and $-?$ ones, or $-?$

C

$$\begin{array}{r} 19 \\ + 25 \\ \hline 44 \end{array}$$

c. To add 19 and 25 the short way, we can work as in box C. **Add ones, then tens.**

Ones. Look at 9 and 5. *Think*, "14." Write "4" in one's place of the sum and **carry 1** (ten).

Tens. Add the 1 (the carried ten) and 1 and 2. *Think*, "4." Write "4" in ten's place of the sum.

Using the short way as in box C, tell how the sums were found in Ex. 2 to 5.

$$\begin{array}{r} 2. \quad \overset{1}{27} \\ + 34 \\ \hline 61 \end{array}$$

$$\begin{array}{r} 3. \quad \overset{1}{42} \\ + 18 \\ \hline 60 \end{array}$$

$$\begin{array}{r} 4. \quad \overset{1}{48\text{¢}} \\ + 46\text{¢} \\ \hline 94\text{¢} \end{array}$$

$$\begin{array}{r} 5. \quad \overset{1}{\$0.17} \\ + 0.49 \\ \hline \$0.66 \end{array}$$

6. Do you carry a ten when the one's figures are 6 and 7? 5 and 8? 3 and 6? Explain.

7. When two one's figures are added, there will never be more than 1 ten to carry. Why?

[W]

Copy and write sums for the examples below. Add the short way. Check your work by adding upward.

| | a | b | c | d | e | f | g |
|-----|---|---|---|---|---|---|---|
| 8. | $\begin{array}{r} 21 \\ + 29 \\ \hline \end{array}$ | $\begin{array}{r} 79 \\ + 13 \\ \hline \end{array}$ | $\begin{array}{r} 17 \\ + 53 \\ \hline \end{array}$ | $\begin{array}{r} 15 \\ + 68 \\ \hline \end{array}$ | $\begin{array}{r} 27 \\ + 36 \\ \hline \end{array}$ | $\begin{array}{r} 29\text{¢} \\ + 64\text{¢} \\ \hline \end{array}$ | $\begin{array}{r} \$0.53 \\ + 0.17 \\ \hline \end{array}$ |
| 9. | $\begin{array}{r} 14 \\ + 36 \\ \hline \end{array}$ | $\begin{array}{r} 58 \\ + 25 \\ \hline \end{array}$ | $\begin{array}{r} 19 \\ + 78 \\ \hline \end{array}$ | $\begin{array}{r} 46 \\ + 24 \\ \hline \end{array}$ | $\begin{array}{r} 26 \\ + 59 \\ \hline \end{array}$ | $\begin{array}{r} 53\text{¢} \\ + 39\text{¢} \\ \hline \end{array}$ | $\begin{array}{r} \$0.36 \\ + 0.26 \\ \hline \end{array}$ |
| 10. | $\begin{array}{r} 18 \\ + 42 \\ \hline \end{array}$ | $\begin{array}{r} 42 \\ + 38 \\ \hline \end{array}$ | $\begin{array}{r} 34 \\ + 18 \\ \hline \end{array}$ | $\begin{array}{r} 48 \\ + 47 \\ \hline \end{array}$ | $\begin{array}{r} 15 \\ + 26 \\ \hline \end{array}$ | $\begin{array}{r} 67\text{¢} \\ + 18\text{¢} \\ \hline \end{array}$ | $\begin{array}{r} \$0.65 \\ + 0.29 \\ \hline \end{array}$ |
| 11. | $\begin{array}{r} 29 \\ + 12 \\ \hline \end{array}$ | $\begin{array}{r} 36 \\ + 57 \\ \hline \end{array}$ | $\begin{array}{r} 34 \\ + 39 \\ \hline \end{array}$ | $\begin{array}{r} 15 \\ + 17 \\ \hline \end{array}$ | $\begin{array}{r} 38 \\ + 43 \\ \hline \end{array}$ | $\begin{array}{r} 49\text{¢} \\ + 16\text{¢} \\ \hline \end{array}$ | $\begin{array}{r} \$0.27 \\ + 0.45 \\ \hline \end{array}$ |
| 12. | $\begin{array}{r} 18 \\ + 69 \\ \hline \end{array}$ | $\begin{array}{r} 29 \\ + 57 \\ \hline \end{array}$ | $\begin{array}{r} 47 \\ + 44 \\ \hline \end{array}$ | $\begin{array}{r} 19 \\ + 49 \\ \hline \end{array}$ | $\begin{array}{r} 67 \\ + 29 \\ \hline \end{array}$ | $\begin{array}{r} 58\text{¢} \\ + 36\text{¢} \\ \hline \end{array}$ | $\begin{array}{r} \$0.32 \\ + 0.29 \\ \hline \end{array}$ |

13. Use ϕ -pictures to check these answers:

a. $29 + 35 = 54$ b. $17 + 44 = 61$ c. $38 + 18 = 46$

14. Use tens and ones to check these answers:

a. $18 + 24 = 52$ b. $26 + 28 = 44$ c. $22 + 19 = 41$

Practice in Carrying

[W]

Copy and write sums. Check your work.

| | a | b | c | d | e | f | g |
|----|------------|------------|------------|------------|------------|-------------|--------------|
| 1. | 66 | 18 | 79 | 36 | 39 | 5¢ | \$0.19 |
| | <u>+29</u> | <u>+54</u> | <u>+1</u> | <u>+45</u> | <u>+52</u> | <u>+45¢</u> | <u>+0.46</u> |
| 2. | 47 | 48 | 67 | 22 | 6 | 59¢ | \$0.26 |
| | <u>+25</u> | <u>+38</u> | <u>+4</u> | <u>+49</u> | <u>+38</u> | <u>+39¢</u> | <u>+0.35</u> |
| 3. | 4 | 58 | 47 | 55 | 84 | 23¢ | \$0.37 |
| | <u>+17</u> | <u>+19</u> | <u>+47</u> | <u>+27</u> | <u>+6</u> | <u>+68¢</u> | <u>+0.39</u> |
| 4. | 16 | 28 | 9 | 37 | 36 | 79¢ | \$0.68 |
| | <u>+74</u> | <u>+57</u> | <u>+43</u> | <u>+23</u> | <u>+17</u> | <u>+ 8¢</u> | <u>+0.12</u> |

► **Extra Practice.** Work Set 31.

[W]

Copy, add, and check. In some examples you carry.

| | | | | | | | | | |
|-----|------------|-----|------------|-----|------------|-----|------------|-----|------------|
| 1. | 10 | 2. | 19 | 3. | 21 | 4. | 26 | 5. | 28 |
| | <u>+80</u> | | <u>+36</u> | | <u>+67</u> | | <u>+2</u> | | <u>+25</u> |
| 6. | 87 | 7. | 79 | 8. | 4 | 9. | 59 | 10. | 8 |
| | <u>+6</u> | | <u>+10</u> | | <u>+65</u> | | <u>+34</u> | | <u>+73</u> |
| 11. | 50 | 12. | 37 | 13. | 73 | 14. | 3 | 15. | 45 |
| | <u>+7</u> | | <u>+18</u> | | <u>+24</u> | | <u>+29</u> | | <u>+46</u> |
| 16. | 19 | 17. | 58 | 18. | 46 | 19. | 5 | 20. | 26 |
| | <u>+52</u> | | <u>+31</u> | | <u>+6</u> | | <u>+30</u> | | <u>+55</u> |

21. 5, 7, 0, 6 22. 3, 7, 8, 9 23. 2, 8, 9, 8

► **Extra Practice.** Work Set 32.



Don's Ride on the Train

Completing problems [W]

Write problem questions. Each **A.** means to write an addition question. Each **S.** means a subtraction question.

1. (Use the picture.) Looking back, Don counted ? men, ? women, and 5 children, counting himself. **A.**

2. Don was to ride 76 miles in all. The train stopped the first time after going 30 miles. **S.**

3. At one time, Don counted 28 women on his side of the car and 17 women on the other side of the car. **A.**

4. Once when the train stopped, there were 37 people in the car. Seven people got off. **S.**

5. On the trip, Don spent 20¢ of his 50¢ for milk and peanuts together. **S.**

6. Don counted the peanuts in the bag. There were 59. He ate all but 10 of them. **S.**

Now work the six problems you made.

Measuring More Carefully

Measuring to $\frac{1}{4}$ in. [O]

Have you been using your finger inch and your arm foot for measuring?

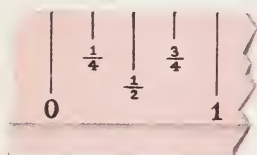
1. On the board, draw a line which is 10 of your finger inches long.

2. Under it, draw a 10-inch line, using your ruler. Which line is longer? How much longer?

3. Using your arm foot, measure and cut a string which you think is just 4 feet long.

4. Measure the string very carefully with your ruler. Is it longer or shorter than 4 feet? By how much?

The picture shows about 1 inch of a ruler. From the



0 line to the number $\frac{1}{2}$ is $\frac{1}{2}$ inch.

It is another $\frac{1}{2}$ inch from the $\frac{1}{2}$ to where? How many $\frac{1}{2}$ inches are there in 1 inch?

Each $\frac{1}{2}$ inch is divided into two equal parts by a black line. Each part is $\frac{1}{4}$ inch, or one quarter of an inch. How many quarter inches do you see in an inch?

Using a ruler, draw lines to show how long or tall

5. Jean's picture is. It is $9\frac{1}{4}$ inches long.

6. Susan's bird cage is. It is $21\frac{1}{2}$ inches high.

7. Mike's box is. It is 1 foot 6 inches long.

8. Nan's dog is. It is 2 feet 3 inches tall.

12 inches (in.) = 1 foot (ft.) 1 ft. = 12 in.

Here Is an Old Friend!

[O]

$15 = n + 8$. The parts of 15 are n and 8. To find the missing part (n), subtract 8 from 15. See box A.

$78 = n + 43$. The parts of 78 are n and 43. Find n (the missing part) by subtracting. See box B.

| A | B |
|---|---|
| $\begin{array}{r} 15 \\ -8 \\ \hline 7 \end{array}$ | $\begin{array}{r} 78 \\ -43 \\ \hline 35 \end{array}$ |
| $15 = 7 + 8$ | $78 = 35 + 43$ |

[W]

Find n in Ex. 1 to 15, as in box B.

- | | | |
|------------------|-------------------|-------------------|
| 1. $29 = n + 13$ | 6. $47 = 40 + n$ | 11. $30 = 10 + n$ |
| 2. $37 = 7 + n$ | 7. $85 = n + 32$ | 12. $78 = 8 + n$ |
| 3. $58 = 36 + n$ | 8. $69 = n + 15$ | 13. $46 = 24 + n$ |
| 4. $76 = n + 50$ | 9. $27 = n + 23$ | 14. $89 = n + 16$ |
| 5. $84 = 24 + n$ | 10. $58 = 43 + n$ | 15. $66 = 4 + n$ |

Practice in Addition and Subtraction

[W]

Write answers on folded paper. Check your work.

| | a | b | c | d | e | f | g |
|----|--|--|--|--|--|--|--|
| 1. | $\begin{array}{r} 89 \\ -72 \\ \hline \end{array}$ | $\begin{array}{r} 19 \\ +74 \\ \hline \end{array}$ | $\begin{array}{r} 78 \\ +20 \\ \hline \end{array}$ | $\begin{array}{r} 8 \\ +69 \\ \hline \end{array}$ | $\begin{array}{r} 29 \\ -8 \\ \hline \end{array}$ | $\begin{array}{r} 20 \\ +60 \\ \hline \end{array}$ | $\begin{array}{r} \$0.27 \\ +0.55 \\ \hline \end{array}$ |
| 2. | $\begin{array}{r} 27 \\ -26 \\ \hline \end{array}$ | $\begin{array}{r} 48 \\ +18 \\ \hline \end{array}$ | $\begin{array}{r} 39 \\ -9 \\ \hline \end{array}$ | $\begin{array}{r} 76 \\ +10 \\ \hline \end{array}$ | $\begin{array}{r} 59 \\ +23 \\ \hline \end{array}$ | $\begin{array}{r} 18 \\ -5 \\ \hline \end{array}$ | $\begin{array}{r} \$0.06 \\ +0.75 \\ \hline \end{array}$ |
| 3. | $\begin{array}{r} 67 \\ -47 \\ \hline \end{array}$ | $\begin{array}{r} 60 \\ +17 \\ \hline \end{array}$ | $\begin{array}{r} 13 \\ +19 \\ \hline \end{array}$ | $\begin{array}{r} 77 \\ -12 \\ \hline \end{array}$ | $\begin{array}{r} 83 \\ +4 \\ \hline \end{array}$ | $\begin{array}{r} 49 \\ -6 \\ \hline \end{array}$ | $\begin{array}{r} \$0.19 \\ +0.59 \\ \hline \end{array}$ |
| 4. | $\begin{array}{r} 98 \\ -30 \\ \hline \end{array}$ | $\begin{array}{r} 78 \\ -8 \\ \hline \end{array}$ | $\begin{array}{r} 89 \\ -21 \\ \hline \end{array}$ | $\begin{array}{r} 8 \\ +73 \\ \hline \end{array}$ | $\begin{array}{r} 57 \\ +33 \\ \hline \end{array}$ | $\begin{array}{r} 28 \\ +67 \\ \hline \end{array}$ | $\begin{array}{r} \$0.48 \\ -0.41 \\ \hline \end{array}$ |



Telling Time with the Calendar

Measures [O]

1. When do we use calendars to tell the time?
2. How many **days** has the **month** of May?
3. On what day does this month of May begin?
4. May 6 comes on what day? May 13?
5. Tell the dates of all the Mondays.
6. The second row of numbers on the calendar shows a **week**. How many days are there in a week?
7. May has **-?-** weeks and **-?-** days over.
8. Do all other months have 31 days? 4 weeks?

[W]

Make a calendar for your birthday month.

9. Make your birthday date in red.
10. Draw a ring around the third Thursday, and another for the second Tuesday.

7 days (da.) = 1 week (wk.)

1 wk. = 7 da.

Do You Know?

Progress Test 15 [W]

Write answers on folded paper.

| | a | b | c | d | e | f | g |
|----|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|------------------------------|
| 1. | 49 <u>+45</u> | 68 <u>-4</u> | 8 <u>+65</u> | 28 <u>+61</u> | 69 <u>-9</u> | 97 <u>-43</u> | 13¢ <u>+48¢</u> |
| 2. | 65 <u>-40</u> | 73 <u>-22</u> | 55 <u>+10</u> | 14 <u>-3</u> | 58 <u>-42</u> | 26 <u>+6</u> | 51¢ <u>-31¢</u> |
| 3. | 47 <u>-6</u> | 28 <u>+4</u> | 64 <u>-50</u> | 17 <u>+53</u> | 32 <u>+37</u> | 29 <u>-7</u> | 74¢ <u>-54¢</u> |
| 4. | 7 7 1 <u>+9</u> | 5 6 8 <u>+8</u> | 3 7 4 <u>+7</u> | 4 9 0 <u>+9</u> | 1 1 8 <u>+9</u> | 2 9 7 <u>+7</u> | 4¢ 6¢ 7¢ <u>+8¢</u> |

Can You Find **n**, the Missing Number?

[W]

$15 - n = 6$. The parts of 15 are **n** and 6. **Subtract 6 to find n**, the missing part. $15 - 6 = 9$, so **n** = 9.

For $48 - n = 12$, subtract 12 to find **n**, the missing part. $48 - 12 = 36$, so **n** = 36.

Find **n** in Ex. 1 to 15. Write your work.

- | | | |
|------------------|-------------------|-------------------|
| 1. $33 - n = 20$ | 6. $48 - n = 35$ | 11. $39 - n = 13$ |
| 2. $56 - n = 36$ | 7. $89 - n = 42$ | 12. $48 - n = 6$ |
| 3. $29 - n = 14$ | 8. $56 - n = 10$ | 13. $74 - n = 24$ |
| 4. $78 - n = 52$ | 9. $75 - n = 41$ | 14. $57 - n = 23$ |
| 5. $69 - n = 35$ | 10. $80 - n = 30$ | 15. $86 - n = 14$ |

Do You Know?

Progress Test 16 [W]

1. If the first Sunday in June is June 1, what will be the date of the second Sunday?
2. Write three examples in the A. family for $2 + 8$.
3. a. $4 + 9 + 6 + 7 = ?$ b. $9 + 7 + 4 + 6 = ?$
Why does Ex. b have the same sum as Ex. a?
4. Write in a shorter way: 3 feet 9 inches.
5. To give each boy $\frac{1}{3}$ of a cake, into how many equal parts must you cut the cake?
6. Name something that weighs about 1 pound?
7. Write an addition example having two 2-place numbers in which you must carry.
8. Write the three numbers that come just after
a. 367; b. 598; c. 700; d. 299.
9. Copy the naming numbers.
7th girl 3 boys page 200 22 cows
10. Draw a clock to show
a. quarter past 8; b. nine o'clock; c. half past 2.

What Is **n**?

[W]

Copy and put in the number for **n**.

- | | |
|----------------------|--------------------------|
| 1. $37 + n = 88$ | 5. 16 and $n = 69$ |
| 2. $n + 25 = 95$ | 6. $30 - n = 20$ |
| 3. 41 plus $n = 63$ | 7. $31 + n = 75$ |
| 4. 78 minus $n = 34$ | 8. 47 take away $n = 30$ |



Fun in the Snow

A. and S. problems [W]

Write your work for Ex. 1 to 6.

1. Nan counted $_?$ children sliding down the hill, $_?$ children going up the hill, and $_?$ children at the top of the hill, or $_?$ children in all.

2. Sue's mother told Sue she could slide for about 30 minutes. After 20 minutes how long could she stay?

3. Ned has been sliding for 20 minutes. If he should stay 15 minutes more, how long would that be in all?

4. Jean has had 24 slides. If she slides 15 more times, how many slides will that be in all?

5. Joe has had 35 slides. Bill has had 15 slides. How many fewer slides has Bill had than Joe?

6. Tom rode alone 18 times and had Rusty on his sled 12 times. How many rides did Tom have?

[O]

Tell why you added or subtracted in each problem.



A New Kind of Subtraction

Higher-decade S. with borrowing [O]

Sue has used 4 of her 32 stamps. To find how many of the 32 stamps are left on the table, she subtracted instead of counting.

A

$$\begin{array}{r} 3 \text{ tens and } 2 \text{ ones} \\ - \quad \quad \quad 4 \text{ ones} \\ \hline \end{array}$$

1. Sue wrote down the example, using tens and ones (box A). Why could Sue not subtract 4 ones?

B

$$\begin{array}{r} 2 \text{ tens and } 12 \text{ ones} \\ - \quad \quad \quad 4 \text{ ones} \\ \hline 2 \text{ tens and } 8 \text{ ones,} \\ \text{or } 28 \end{array}$$

2. Sue wrote the example over again, as in box B. This time, for 3 tens and 2 ones, she wrote, "2 tens and 12 ones." Why can she do this?

3. Explain Sue's subtraction in box B.

C

$$\begin{array}{r} \overset{2}{\cancel{3}} \overset{(12)}{\cancel{2}} \\ - 4 \\ \hline 28 \end{array}$$

4. Box C shows a quick way to subtract. The 32 is changed from 3 tens and 2 ones to 2 tens and 12 ones. This is called **borrowing a ten**. Explain the borrowing in box C.

5. Nine of Ann's 32 stamps are red. Do you use the example $32 - 9 = ?$ to find how many are not red?

6. Must you borrow in this example? Why?

7. Remember: 32 means "3 tens and 2 ones," and it means "2 tens and 12 ones." Tell how to finish the work that is started in box D; in box E.

| D | E |
|--|---|
| $\begin{array}{r} 2 \text{ tens and } 12 \text{ ones} \\ - \quad \quad \quad 9 \text{ ones} \\ \hline ? \quad \text{and} \quad ? \quad , \text{ or } -? \end{array}$ | $\begin{array}{r} 32 \\ -9 \\ \hline ? \end{array}$ |

8. $43 - 8 = ?$ Tell how to finish the work that is started in box F; in box G.

| F | G |
|--|---|
| $\begin{array}{r} 3 \text{ } -? \text{ and } -? \text{ ones} \\ - \quad \quad \quad -? \text{ ones} \\ \hline ? \quad \text{and} \quad ? \quad , \text{ or } -? \end{array}$ | $\begin{array}{r} 43 \\ -8 \\ \hline ? \end{array}$ |

Why must you borrow in Ex. 9 to 14?

9. $25 - 7$

10. $33 - 8$

11. $42 - 6$

12. $24 - 9$

13. $36 - 7$

14. $52 - 5$

[W]

For Ex. 15 to 17, subtract with tens and ones as in box F. Then subtract with figures as in box G.

15. $37 - 8$

16. $56 - 9$

17. $48 - 9$

When you cannot subtract the ones in an example, you borrow a ten.

Borrowing in Subtraction

Higher-decade S. with bridging [O]

1. To subtract the ones, must you borrow a ten in Ex. a? in Ex. b? Why?

| a | b |
|--|--|
| $\begin{array}{r} 42 \\ -7 \\ \hline 35 \end{array}$ | $\begin{array}{r} 76 \\ -9 \\ \hline 67 \end{array}$ |

2. In Ex. a, the ten's figure in the remainder is 3. Why?

3. In Ex. b, the ten's figure in the remainder is 6. Why?

Borrowing a ten in these examples makes the ten's figure in the remainder one less than it was in the top number.

In which examples must you borrow a ten? Why?

| | a | b | c | d | e | f | g | h |
|----|---|---|---|---|---|---|---|---|
| 4. | $\begin{array}{r} 60 \\ -6 \\ \hline \end{array}$ | $\begin{array}{r} 54 \\ -8 \\ \hline \end{array}$ | $\begin{array}{r} 37 \\ -7 \\ \hline \end{array}$ | $\begin{array}{r} 54 \\ -9 \\ \hline \end{array}$ | $\begin{array}{r} 48 \\ -6 \\ \hline \end{array}$ | $\begin{array}{r} 83 \\ -4 \\ \hline \end{array}$ | $\begin{array}{r} 35¢ \\ -4¢ \\ \hline \end{array}$ | $\begin{array}{r} 72¢ \\ -5¢ \\ \hline \end{array}$ |

Say the one's figure, then the whole remainder.

| | | | | | | | | |
|----|--|--|--|--|--|--|---|---|
| 5. | $\begin{array}{r} 72 \\ -9 \\ \hline 6? \end{array}$ | $\begin{array}{r} 24 \\ -7 \\ \hline 1? \end{array}$ | $\begin{array}{r} 40 \\ -8 \\ \hline 3? \end{array}$ | $\begin{array}{r} 65 \\ -6 \\ \hline 5? \end{array}$ | $\begin{array}{r} 37 \\ -8 \\ \hline 2? \end{array}$ | $\begin{array}{r} 86 \\ -7 \\ \hline 7? \end{array}$ | $\begin{array}{r} 54¢ \\ -4¢ \\ \hline 5?¢ \end{array}$ | $\begin{array}{r} 90¢ \\ -5¢ \\ \hline 8?¢ \end{array}$ |
|----|--|--|--|--|--|--|---|---|

Say the ten's figure, then the whole remainder.

| | | | | | | | | |
|----|--|--|--|--|--|--|---|---|
| 6. | $\begin{array}{r} 21 \\ -5 \\ \hline ?6 \end{array}$ | $\begin{array}{r} 93 \\ -6 \\ \hline ?7 \end{array}$ | $\begin{array}{r} 55 \\ -8 \\ \hline ?7 \end{array}$ | $\begin{array}{r} 70 \\ -7 \\ \hline ?3 \end{array}$ | $\begin{array}{r} 67 \\ -8 \\ \hline ?9 \end{array}$ | $\begin{array}{r} 30 \\ -4 \\ \hline ?6 \end{array}$ | $\begin{array}{r} 82¢ \\ -6¢ \\ \hline ?6¢ \end{array}$ | $\begin{array}{r} 41¢ \\ -3¢ \\ \hline ?8¢ \end{array}$ |
|----|--|--|--|--|--|--|---|---|

[W]

Which remainders are wrong? Find out by making ϕ -pictures or by using tens and ones.

| | | | | | | | | |
|----|--|--|--|--|--|--|---|---|
| 7. | $\begin{array}{r} 62 \\ -6 \\ \hline 56 \end{array}$ | $\begin{array}{r} 51 \\ -8 \\ \hline 53 \end{array}$ | $\begin{array}{r} 34 \\ -4 \\ \hline 20 \end{array}$ | $\begin{array}{r} 53 \\ -9 \\ \hline 44 \end{array}$ | $\begin{array}{r} 48 \\ -7 \\ \hline 42 \end{array}$ | $\begin{array}{r} 84 \\ -5 \\ \hline 89 \end{array}$ | $\begin{array}{r} 36¢ \\ -5¢ \\ \hline 21¢ \end{array}$ | $\begin{array}{r} 75¢ \\ -8¢ \\ \hline 67¢ \end{array}$ |
|----|--|--|--|--|--|--|---|---|

New Subtraction Families

Higher-decade S. with bridging [O]

On page 78 you had easy S. facts and their families. Harder subtraction facts have families, too.

1. The examples in box A are in the $12 - 7$ family. $12 - 7 = 5$, so the one's figure in each answer is 5. Say three more examples in this family.

| | | | |
|---|--|--|--|
| A | $\begin{array}{r} 32 \\ -7 \\ \hline 25 \end{array}$ | $\begin{array}{r} 82 \\ -7 \\ \hline 75 \end{array}$ | $\begin{array}{r} 22 \\ -7 \\ \hline 15 \end{array}$ |
|---|--|--|--|

| | | | |
|---|--|--|--|
| B | $\begin{array}{r} 51 \\ -8 \\ \hline 43 \end{array}$ | $\begin{array}{r} 21 \\ -8 \\ \hline 13 \end{array}$ | $\begin{array}{r} 81 \\ -8 \\ \hline 73 \end{array}$ |
|---|--|--|--|

2. In box A, the 2 in 25, the remainder, is one less than the 3 in 32. That is, the figure in ten's place in the remainder is down 1. Is this so for $82 - 7$? for $22 - 7$? Why?

3. The examples in box B are in what family?

4. In box B, what is the one's figure in each remainder?

5. Why is the ten's figure down 1 in each remainder?

6. In boxes A and B, you can borrow a ten. It is quicker to use families and think the ten's figure down 1. Say the ten's figure for each of these:

a. $24 - 8 = ?6$ b. $67 - 9 = ?8$ c. $40 - 7 = ?3$

7. The three examples in box C belong to what family?

8. For each example in C, the one's figure will be $-?..$

| | | | |
|---|---|---|---|
| C | $\begin{array}{r} 80 \\ -6 \\ \hline ? \end{array}$ | $\begin{array}{r} 30 \\ -6 \\ \hline ? \end{array}$ | $\begin{array}{r} 90 \\ -6 \\ \hline ? \end{array}$ |
|---|---|---|---|

For all examples in a subtraction family, the one's figures in the remainders are the same.

If you cannot subtract the ones, the ten's figure in the remainder is down 1.

Practice with Subtraction Families

[O]

Say the missing ten's figures.

1. $13 - 5 = 8$, so $23 - 5 = ?8$, and $43 - 5 = ?8$
2. $12 - 5 = 7$, so $22 - 5 = ?7$, and $62 - 5 = ?7$
3. $10 - 6 = 4$, so $40 - 6 = ?4$, and $70 - 6 = ?4$

Say the missing numbers in rows 4 to 7.

4. $11 - 3 = 8$, so $31 - 3 = ?8$, and $61 - 3 = 5?$
5. $14 - 5 = 9$, so $24 - 5 = ?9$, and $74 - 5 = 6?$
6. $17 - 8 = 9$, so $47 - 8 = ?9$, and $87 - 8 = ??$
7. $13 - 6 = 7$, so $53 - 6 = ??$, and $93 - 6 = ??$

Say three examples, with answers, in each family:

- | | | |
|--------------|--------------|--------------|
| 8. $11 - 9$ | 9. $15 - 6$ | 10. $13 - 7$ |
| 11. $14 - 7$ | 12. $10 - 7$ | 13. $12 - 8$ |

[W]

Using subtraction families, write the remainders on folded paper. For Ex. 14a, *think*, "6, 26." Write, "26." For Ex. 14g, *think*, "9, 49." Write, "\$0.49."

| | a | b | c | d | e | f | g |
|-----|-----------|-----------|-----------|-----------|-----------|------------|--------------|
| 14. | 30 | 22 | 81 | 46 | 47 | 63¢ | \$0.56 |
| | <u>-4</u> | <u>-7</u> | <u>-8</u> | <u>-8</u> | <u>-9</u> | <u>-7¢</u> | <u>-0.07</u> |
| 15. | 48 | 74 | 27 | 13 | 27 | 30¢ | \$0.64 |
| | <u>-9</u> | <u>-6</u> | <u>-9</u> | <u>-8</u> | <u>-8</u> | <u>-6¢</u> | <u>-0.08</u> |
| 16. | 43 | 90 | 51 | 35 | 71 | 72¢ | \$0.86 |
| | <u>-9</u> | <u>-8</u> | <u>-4</u> | <u>-9</u> | <u>-6</u> | <u>-3¢</u> | <u>-0.09</u> |
| 17. | 72 | 42 | 91 | 25 | 32 | 53¢ | \$0.25 |
| | <u>-6</u> | <u>-4</u> | <u>-5</u> | <u>-7</u> | <u>-8</u> | <u>-5¢</u> | <u>-0.08</u> |

A Quick Way to Subtract

Higher-decade S. with bridging [O]

Al has 25¢, Joe has 30¢, and Mike has 42¢. If each boy buys an 8¢ balloon, each one has how much money left?

| | | |
|------------|------------|------------|
| 1. 25¢ | 2. 30¢ | 3. 42¢ |
| <u>-8¢</u> | <u>-8¢</u> | <u>-8¢</u> |

4. In Ex. 1 to 3, how do you think the one's figures so you can subtract?

5. In the answers, why are the ten's figures down 1 from the tens in 25, 30, and 42?

For Ex. 1, you can see that the ten's figure will be down 1, so *think* the remainder all at once, "17¢."

Give remainders for Ex. 2 and 3 this quick way.

On page 172, say answers the quick way for rows 14 to 17.



Write remainders only. Use the quick way.

[W]

| a | b | c | d | e |
|------------|--------|--------|--------|--------|
| 6. 25 - 7 | 46 - 8 | 53 - 5 | 40 - 3 | 33 - 5 |
| 7. 32 - 9 | 91 - 6 | 31 - 7 | 62 - 4 | 80 - 7 |
| 8. 73 - 4 | 52 - 5 | 84 - 7 | 28 - 9 | 40 - 8 |
| 9. 83 - 7 | 41 - 2 | 34 - 9 | 37 - 8 | 56 - 7 |
| 10. 67 - 9 | 90 - 2 | 92 - 3 | 60 - 9 | 81 - 4 |
| 11. 65 - 9 | 82 - 5 | 24 - 9 | 75 - 7 | 35 - 7 |
| 12. 37 - 9 | 63 - 6 | 41 - 3 | 92 - 6 | 66 - 9 |

➤ **Extra Practice.** Work Sets 33 and 34.

Practice in Subtracting

Higher-decade S. [O]

In all examples like $38 - 3$, the ten's figure in the remainder is not changed. Why?

But for examples like $43 - 7$, the ten's figure in the remainder is down 1. Why?

For rows 1 to 8 use the quick way.

| | a | b | c | d | e |
|----|----------|----------|----------|----------|----------|
| 1. | $60 - 3$ | $35 - 7$ | $21 - 4$ | $79 - 6$ | $21 - 7$ |
| 2. | $43 - 4$ | $97 - 5$ | $74 - 3$ | $35 - 8$ | $57 - 9$ |
| 3. | $49 - 8$ | $81 - 9$ | $46 - 7$ | $62 - 7$ | $34 - 6$ |
| 4. | $21 - 5$ | $78 - 8$ | $33 - 2$ | $50 - 6$ | $97 - 7$ |
| 5. | $74 - 7$ | $56 - 4$ | $83 - 9$ | $47 - 8$ | $22 - 5$ |
| 6. | $37 - 2$ | $80 - 4$ | $74 - 4$ | $38 - 6$ | $83 - 7$ |
| 7. | $92 - 8$ | $65 - 9$ | $26 - 8$ | $44 - 9$ | $78 - 2$ |
| 8. | $35 - 6$ | $42 - 8$ | $52 - 9$ | $81 - 7$ | $65 - 8$ |

[W]

Copy and subtract. Be careful!

| | a | b | c | d | e | f | g |
|-----|--------------------------------|--------------------------------|--------------------------------|--------------------------------|----------------------------------|----------------------------------|---------------------------------------|
| 9. | 69 <u>-7</u> | 41 <u>-8</u> | 52 <u>-9</u> | 30 <u>-9</u> | $82¢$ <u>$-4¢$</u> | $24¢$ <u>$-8¢$</u> | $\$0.37$ <u>-0.04</u> |
| 10. | 20 <u>-2</u> | 73 <u>-5</u> | 96 <u>-5</u> | 41 <u>-2</u> | $52¢$ <u>$-6¢$</u> | $35¢$ <u>$-9¢$</u> | $\$0.40$ <u>-0.08</u> |
| 11. | 34 <u>-5</u> | 63 <u>-8</u> | 98 <u>-5</u> | 70 <u>-7</u> | $27¢$ <u>$-3¢$</u> | $42¢$ <u>$-8¢$</u> | $\$0.52$ <u>-0.03</u> |
| 12. | 81 <u>-6</u> | 70 <u>-5</u> | 23 <u>-6</u> | 51 <u>-3</u> | $35¢$ <u>$-6¢$</u> | $63¢$ <u>$-7¢$</u> | $\$0.86$ <u>-0.09</u> |

Which Answer Cannot Be Right?

Help in problem-solving: estimating [O]

Remainders are always smaller than the number from which you subtract.

1. Sam's kite tail was 42 inches. He cut off 8 inches. Then it was $-?$ inches long.

Joe thought that the tail would be 50 inches long, but he was wrong. Why?

A remainder is wrong if it is larger than the number you subtract from. Tell for each problem which answer must be wrong.



2. Mary missed 8 of the 34 words on a spelling test. How many words were right? 42 26

3. A large ball cost 57¢. A book cost 37¢. How much less did the book cost? 20¢ 94¢

4. Of 58 toy soldiers, 32 were broken. How many were not broken? 90 26

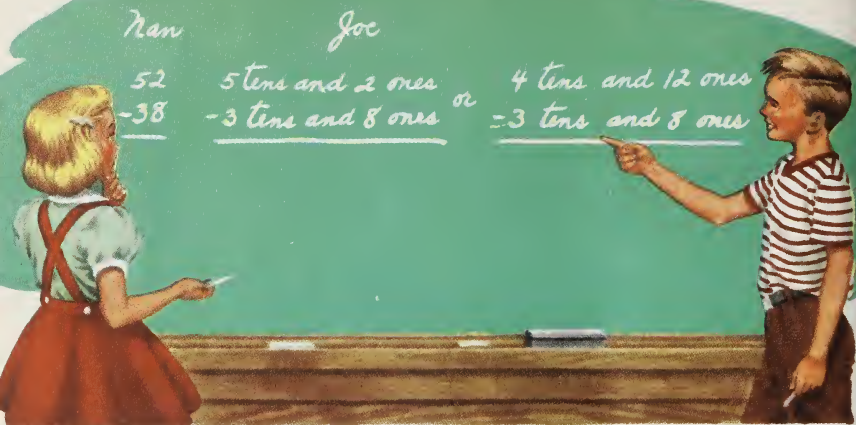
5. Nan cut out all except 6 of her 30 paper dolls. How many were cut out? 36 24

6. Our room is 37 feet long and 25 feet wide. How many feet longer is the room than it is wide? 12 62

7. One boat is 12 feet long. Another is 26 feet long. How many feet longer is the larger boat? 38 14

[W]

Write the work for problems 1 to 7.



Helping Nan Subtract

S. of 2-place numbers with borrowing [O]

Miss Wells said, "You will need 52 sheets of paper to make your new picture books."

Nan had 38 sheets. To find how many more she needed, she wrote on the board $52 - 38$. Then she said, "How do I subtract? I can't take 8 from 2."

Joe showed her a way. Look at his work in the picture. Explain what he wrote.

1. On the board, copy Joe's work and finish it.

2. Miss Wells said, "There is a short way to do the example. Subtract ones, then tens. Do it this way." (Study her work in the box below.)

$$\begin{array}{r} 4 \text{ (2)} \\ 52 \\ -38 \\ \hline 14 \end{array}$$

Ones: *Think,* "I can't take 8 from 2, so I **change the groups, or borrow a ten.** I put it with the 2 ones. Then 8 from 12 is 4." Write "4" in one's place in the answer.

Tens: *Think,* "3 from 4 is 1." Write "1" in ten's place in the answer.

Check by adding upward: $4 + 8 = 12$, $1 + 1 + 3 = 5$.

In which examples must you borrow? Why?

| | a | b | c | d | e | f | g | h |
|----|------------|------------|------------|------------|------------|------------|------------|-------------|
| 3. | 52 | 47 | 91 | 66 | 90 | 43 | 82 | 35¢ |
| | <u>-27</u> | <u>-33</u> | <u>-74</u> | <u>-36</u> | <u>-78</u> | <u>-14</u> | <u>-48</u> | <u>-20¢</u> |

Tell the missing figure in each example. Then tell the whole remainder.

| | | | | | | | | |
|----|------------|------------|------------|------------|------------|------------|------------|-------------|
| 4. | 76 | 53 | 60 | 82 | 42 | 84 | 37 | 83¢ |
| | <u>-49</u> | <u>-28</u> | <u>-37</u> | <u>-36</u> | <u>-34</u> | <u>-39</u> | <u>-19</u> | <u>-55¢</u> |
| | 2? | 2? | 2? | 4? | ?8 | ?5 | ?8 | ?8¢ |

Find the subtractions that are wrong and tell what is wrong with the work.

| | | | | | | | | |
|----|------------|------------|------------|------------|------------|------------|------------|-------------|
| 5. | 30 | 65 | 28 | 70 | 54 | 36 | 61 | 83¢ |
| | <u>-26</u> | <u>-47</u> | <u>-19</u> | <u>-35</u> | <u>-38</u> | <u>-17</u> | <u>-49</u> | <u>-46¢</u> |
| | 14 | 18 | 9 | 45 | 16 | 19 | 22 | 37¢ |

[W]

In rows 6 to 8, copy, subtract, and check.

| | | | | | | | | |
|----|------------|------------|------------|------------|------------|------------|------------|-------------|
| 6. | 94 | 60 | 76 | 44 | 55 | 71 | 43 | 52¢ |
| | <u>-65</u> | <u>-33</u> | <u>-38</u> | <u>-17</u> | <u>-26</u> | <u>-38</u> | <u>-29</u> | <u>-15¢</u> |

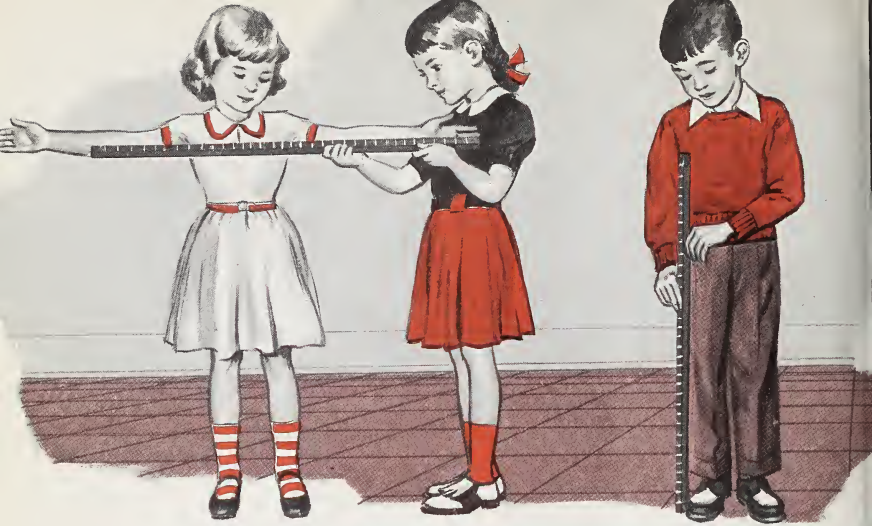
| | | | | | | | | |
|----|------------|------------|------------|------------|------------|------------|------------|-------------|
| 7. | 70 | 81 | 94 | 35 | 52 | 97 | 95 | 33¢ |
| | <u>-24</u> | <u>-25</u> | <u>-56</u> | <u>-19</u> | <u>-39</u> | <u>-38</u> | <u>-48</u> | <u>-27¢</u> |

| | | | | | | | | |
|----|------------|------------|------------|------------|------------|------------|------------|-------------|
| 8. | 27 | 42 | 60 | 71 | 88 | 41 | 67 | 90¢ |
| | <u>-17</u> | <u>-23</u> | <u>-21</u> | <u>-56</u> | <u>-35</u> | <u>-37</u> | <u>-25</u> | <u>-29¢</u> |

9. Using tens and ones, check these subtractions:

a. $70 - 42 = 38$ b. $81 - 27 = 54$ c. $62 - 59 = 13$

► **Extra Practice.** Work Sets 35 and 36.



Measuring in Yards and Miles

[O]

Some things are measured in **yards**.

1. Do what Tom is doing. See how far up your body the yardstick comes. This distance is your **body yard**.

2. Do what Linda and Betsy are doing. See how far the yardstick reaches. Call this your **arm yard**.

3. Draw a line a yard long on the blackboard.

4. Under it, draw lines 1 foot and 1 inch long.

5. Look at a yardstick. How many feet long is it? How many inches long is it?

3 feet (ft.) = 1 yard (yd.) 36 inches (in.) = 1 yard

6. Can a man be 2 yards tall? 4 yards tall?

We measure very long distances in **miles**.

7. Tell a place that is a mile from your school. Think of this distance when you hear about a mile.

Say the right word—feet, inches, yards, or miles.

8. The butterfly is 2 -?- wide.
9. The flagpole is 50 -?- high.
10. It is 15 -?- from one town to the next.
11. Ann's hair ribbon is 1 -?- long.
12. It takes 3 -?- of cloth for a coat.
13. The dog house is 4 -?- long.
14. We rode 1 -?- in our car.
15. Her finger is $2\frac{1}{2}$ -?- long.

Do You Know?

Progress Test 17 [W]

Use folded paper. Write the answers.

| | a | b | c | d | e | f | g |
|----|------------|------------|------------|------------|------------|------------|--------------|
| 1. | 87 | 90 | 30 | 91 | 74 | 86 | \$0.46 |
| | <u>+8</u> | <u>-70</u> | <u>+40</u> | <u>-68</u> | <u>-6</u> | <u>-60</u> | <u>+0.34</u> |
| 2. | 81 | 57 | 96 | 19 | 87 | 26 | \$0.73 |
| | <u>-57</u> | <u>+29</u> | <u>-37</u> | <u>+47</u> | <u>-9</u> | <u>+59</u> | <u>-0.48</u> |
| 3. | 74 | 25 | 76 | 7 | 85 | 58 | \$0.19 |
| | <u>-68</u> | <u>+48</u> | <u>-54</u> | <u>+44</u> | <u>-37</u> | <u>-9</u> | <u>+0.55</u> |
| 4. | 9 | 96 | 44 | 50 | 60 | 92 | \$0.73 |
| | <u>+56</u> | <u>-37</u> | <u>+49</u> | <u>-6</u> | <u>+38</u> | <u>-29</u> | <u>-0.48</u> |
| 5. | 6 | 1 | 40 | 7 | 32 | 8 | 6¢ |
| | 7 | 8 | 7 | 0 | 3 | 1 | 8¢ |
| | 2 | 4 | 6 | 5 | 0 | 9 | 0 |
| | <u>+9</u> | <u>+6</u> | <u>+5</u> | <u>+8</u> | <u>+6</u> | <u>+4</u> | <u>+7¢</u> |

A Page of Practice

[W]

Use folded paper. Watch for borrowing!

| | a | b | c | d | e | f | g | h |
|----|------------|------------|------------|------------|------------|------------|------------|--------------|
| 1. | 57 | 94 | 89 | 23 | 41 | 67 | 95 | \$0.84 |
| | <u>-38</u> | <u>-8</u> | <u>-8</u> | <u>-19</u> | <u>-36</u> | <u>-46</u> | <u>-77</u> | <u>-0.04</u> |
| 2. | 76 | 52 | 85 | 30 | 63 | 95 | 98 | \$0.86 |
| | <u>-7</u> | <u>-29</u> | <u>-53</u> | <u>-9</u> | <u>-27</u> | <u>-28</u> | <u>-36</u> | <u>-0.30</u> |
| 3. | 58 | 46 | 77 | 81 | 38 | 74 | 30 | \$0.98 |
| | <u>-53</u> | <u>-9</u> | <u>-50</u> | <u>-48</u> | <u>-8</u> | <u>-65</u> | <u>-18</u> | <u>-0.50</u> |
| 4. | 75 | 20 | 59 | 63 | 29 | 42 | 88 | \$0.99 |
| | <u>-39</u> | <u>-7</u> | <u>-16</u> | <u>-6</u> | <u>-24</u> | <u>-18</u> | <u>-29</u> | <u>-0.92</u> |

➤ **Extra Practice.** Work Sets 37 and 38.

[W]

Use folded paper. Watch the signs and check.

| | a | b | c | d | e | f | g | h |
|----|------------|------------|------------|------------|------------|------------|------------|--------------|
| 1. | 30 | 91 | 15 | 89 | 63 | 90 | 6 | \$0.43 |
| | <u>+60</u> | <u>-17</u> | <u>+78</u> | <u>-87</u> | <u>-5</u> | <u>-60</u> | <u>+79</u> | <u>+0.48</u> |
| 2. | 24 | 52 | 49 | 63 | 85 | 94 | 28 | \$0.86 |
| | <u>-6</u> | <u>-47</u> | <u>+50</u> | <u>-38</u> | <u>-60</u> | <u>-59</u> | <u>+9</u> | <u>-0.68</u> |
| 3. | 89 | 8 | 70 | 39 | 52 | 98 | 54 | \$0.80 |
| | <u>-5</u> | <u>+40</u> | <u>-56</u> | <u>+38</u> | <u>-5</u> | <u>-47</u> | <u>+28</u> | <u>-0.73</u> |

Copy in columns and add.

- | | | |
|----------------|----------------|--------------------|
| 4. 30, 5, 2, 6 | 6. 6, 0, 7, 5 | 8. 7¢, 2¢, 6¢, 9¢ |
| 5. 1, 8, 7, 3 | 7. 22, 3, 4, 9 | 9. 10¢, 8¢, 6¢, 4¢ |

Do You Understand?

Test of Information and Meaning 4

1. Write two A. examples in which you must carry.
2. Write two S. examples in which you must borrow.
3. Draw a pie. Divide it into fourths.
4. Write three examples in the $5 + 9$ A. family.
5. Do the same for the $11 - 8$ S. family.
6. Draw a circle and a rectangle.

Write Ex. 7 to 10 in words:

7. $\frac{1}{2}$ 8. \$0.72 9. \$6.09 10. 240

Write Ex. 11 to 13 in figures:

11. Three dollars and twenty-one cents.
12. One fourth 13. Seven hundred eighteen

Write out answers for Ex. 14 to 17.

14. What do we call numbers like $\frac{1}{2}$ and $\frac{1}{3}$?
15. Write a 3-place number with 5 in one's place.
16. How many thirds of a pie are in a whole pie?
17. What number equals 3 tens and 12 ones?

Answer Ex. 18 to 23 by writing "Yes" or "No."

18. Can you subtract to find n in $46 = n + 32$?
19. Are there 24 oz. in 1 lb.?
20. Does Tuesday follow Wednesday every week?
21. In 48, is the 4 in ten's place?
22. In 1 foot are there 14 inches?
23. In 1 inch are there two $\frac{1}{2}$ inches?

Do You Make Mistakes?

Diagnostic Test 4

Write answers on folded paper. Check your work.

| | a | b | c | d | e | Study Pages | Practice Sets |
|----|---------------------|---------------------|--------------------------|--------------------------|-----------------------------|-------------|---------------|
| 1. | 23 <u>+9</u> | 5 <u>+48</u> | 37 <u>+9</u> | 2 <u>+58</u> | 76¢ <u>+4¢</u> | 144-149 | 27, 28 |
| 2. | 7 5 <u>+9</u> | 5 9 <u>+8</u> | 3 7 5 <u>+7</u> | 4 9 7 <u>+5</u> | 9¢ 0 8¢ <u>+7¢</u> | 151 | 29 |
| 3. | 54 <u>+37</u> | 23 <u>+18</u> | 46 <u>+19</u> | 37 <u>+56</u> | \$0.19 <u>+0.75</u> | 158-159 | 31, 32 |
| 4. | 61 <u>-8</u> | 77 <u>-9</u> | 23 <u>-4</u> | 48 <u>-9</u> | \$0.50 <u>-0.05</u> | 168-173 | 33, 34 |
| 5. | 74 <u>-26</u> | 40 <u>-38</u> | 65 <u>-27</u> | 81 <u>-32</u> | \$0.52 <u>-0.18</u> | 176 | 35, 36 |

Can You Work Problems?

Problem Test 4

Write your work for problems 1 to 8.

1. Ann had 23 birthday presents. Five of them were from her family. How many other presents did she get?

2. Ann got 12 books. She did own 28 books. How many books does she now have?

182 (one hundred eighty-two)

3. One book had 36 pictures, 9 of them about animals. How many other pictures were there?

4. Ann had 85¢ in money. She put 25¢ in her bank. How much money did she not put in the bank?

5. Her money was 5 pennies, 7 nickels, 2 dimes and a quarter. How many coins was that?

6. Ann got 20 birthday cards. She got 9 less last year. How many cards did she get last year?

7. On her birthday, last January, Ann was 54 inches tall. This January she is 56 inches tall. How many inches taller was she this birthday than last?

8. At the time Ann was 54 inches tall, her father was 13 inches taller. How tall was he?

How Well Can You Figure?

Computation Test 4

Copy. Then add or subtract. Check your work.

| | | | | |
|---|--|---|---|---|
| 1. $\begin{array}{r} 53 \\ +17 \\ \hline \end{array}$ | 2. $\begin{array}{r} 67 \\ -9 \\ \hline \end{array}$ | 3. $\begin{array}{r} 20 \\ +40 \\ \hline \end{array}$ | 4. $\begin{array}{r} 35 \\ +27 \\ \hline \end{array}$ | 5. $\begin{array}{r} \$0.92 \\ -0.59 \\ \hline \end{array}$ |
|---|--|---|---|---|

| | | | | |
|--|---|---|--|--|
| 6. $\begin{array}{r} 32 \\ -7 \\ \hline \end{array}$ | 7. $\begin{array}{r} 58 \\ -34 \\ \hline \end{array}$ | 8. $\begin{array}{r} 24 \\ +38 \\ \hline \end{array}$ | 9. $\begin{array}{r} 65 \\ -5 \\ \hline \end{array}$ | 10. $\begin{array}{r} \$0.18 \\ +0.37 \\ \hline \end{array}$ |
|--|---|---|--|--|

| | | | | |
|--|---|--|--|--|
| 11. $\begin{array}{r} 46 \\ +30 \\ \hline \end{array}$ | 12. $\begin{array}{r} 80 \\ -7 \\ \hline \end{array}$ | 13. $\begin{array}{r} 23 \\ +18 \\ \hline \end{array}$ | 14. $\begin{array}{r} 80 \\ -68 \\ \hline \end{array}$ | 15. $\begin{array}{r} \$0.43 \\ -0.37 \\ \hline \end{array}$ |
|--|---|--|--|--|

16. $8 + 5 + 6 + 8$

20. $24 - 6$

24. $7 + 68$

17. $9 + 6 + 0 + 0$

21. $47 + 8$

25. $48 + 9$

18. $2¢ + 6¢ + 9¢ + 3¢$

22. $26 + 9$

26. $48 - 8$

19. $22 + 5 + 7 + 9$

23. $84 - 9$

27. $52 - 8$



Before the Circus Began

Column A. of 2-place numbers without and with carrying [O]

Before going into the big tent at the circus, Ned and Sam spent money for these things:

| | | | |
|---------------|--------------|-----------------|--------------|
| Ned's Balloon | \$0.12 | Sam's Ice cream | \$0.13 |
| Cowboy hat | 0.30 | Pony ride | 0.12 |
| Ice cream | 0.13 | Whistle | 0.17 |
| Ned's total | <u>- ? -</u> | Horn | 0.15 |
| | | Sam's total | <u>- ? -</u> |

Remember: You add money numbers like any other numbers. Put a dollar sign and cent point in the sum.

1. To find the total Ned spent, add downward. Look at 2 and 3. *Think*, "5." Write "5." Then for the next column, *think*, "4, 5." Write "5." What must you do to make the total mean a money number?

2. Tell how to find Sam's total. Add downward.

Tell how to add in the examples in row 3.

| | a | b | c | d | e | f | g | h |
|----|------------|-----------|------------|------------|------------|------------|-------------|--------------|
| 3. | 42 | 30 | 2 | 33 | 14 | 40 | 8¢ | \$0.22 |
| | 10 | 14 | 35 | 24 | 28 | 6 | 43¢ | 0.16 |
| | <u>+22</u> | <u>+3</u> | <u>+33</u> | <u>+40</u> | <u>+50</u> | <u>+19</u> | <u>+26¢</u> | <u>+0.29</u> |
| | 74 | 47 | 70 | 97 | 92 | 65 | 77¢ | \$0.67 |

[W]

Use folded paper. Add to find totals and check.

| | | | | | | | | |
|----|------------|------------|-----------|------------|------------|------------|------------|--------------|
| 4. | 40 | 3 | 31 | 24 | 16 | 15 | 32¢ | \$0.12 |
| | 12 | 51 | 24 | 13 | 23 | 30 | 19¢ | 0.18 |
| | 34 | 12 | 10 | 25 | 40 | 6 | 26¢ | 0.40 |
| | <u>+11</u> | <u>+22</u> | <u>+2</u> | <u>+36</u> | <u>+17</u> | <u>+13</u> | <u>+2¢</u> | <u>+0.17</u> |

➤ **Extra Practice.** Work Extra Practice Set 39.

Saving and Earning Money

Carrying 2 tens or more [O]

1. Gail had 49¢ in her bank. The next three days, she put in 15¢, 7¢, and 8¢. How much was in her bank then?



She emptied her bank to count her money and find out how much she had. You can find out by adding the numbers as in box A.

Add ones. *Think, "14, 21, 29."* Write "9" in one's place in the sum. Carry 2 tens.

Add tens. *Think, "6 (the 2 tens you carried, and 4), 7."* Write "7" in ten's place in the sum.

The sum is 79¢. **Check by adding upward.**

A

$$\begin{array}{r} 2 \\ 49¢ \\ 15¢ \\ 7¢ \\ + 8¢ \\ \hline 79¢ \end{array}$$

2. In four days, Joe sold 25, 16, 19, and 23 papers. How many did he sell in all?

Add ones (box B). *Think, "11, 20, 23."* What do you write? Where? How many tens do you carry?

Now add tens. The sum is _?_.

B

$$\begin{array}{r} 2 \\ 25 \\ 16 \\ 19 \\ + 23 \\ \hline 83 \end{array}$$

Many times you must carry 2 tens or more.

Which additions are wrong in Ex. 3 to 8?

| | | | | | |
|--------|--------|--------|-------|-----------|-----------|
| 3. 26¢ | 4. 49¢ | 5. 50¢ | 6. 8¢ | 7. \$0.11 | 8. \$0.18 |
| 17¢ | 10¢ | 18¢ | 27¢ | 0.28 | 0.07 |
| 39¢ | 8¢ | 19¢ | 5¢ | 0.16 | 0.07 |
| +17¢ | +26¢ | +7¢ | +26¢ | +0.18 | +0.08 |
| 99¢ | 93¢ | 74¢ | 66¢ | \$0.63 | \$0.20 |

Copy in columns and add. Check your work.

[W]

| a | b | c |
|--------------------|----------------|------------------------|
| 9. 24, 16, 16, 16 | 24, 7, 12, 23 | 49¢, 7¢, 6¢, 5¢ |
| 10. 8, 17, 53, 9 | 17, 16, 33, 8 | \$0.25, \$0.17, \$0.36 |
| 11. 13, 12, 47, 26 | 30, 12, 5, 42 | 7¢, 9¢, 18¢, 43¢ |
| 12. 21, 4, 30, 4 | 16, 37, 13, 25 | 5¢, 22¢, 12¢, 8¢ |
| 13. 10, 4, 30, 42 | 16, 12, 35, 16 | \$0.25, \$0.16, \$0.07 |

► **Extra Practice.** Work Sets 40 and 41.

Dozens of Things

Measures [O]

1. If you buy a **dozen** eggs, how many eggs should you get? Is it 10? 18? 12?

2. If you buy a dozen candles, how many candles should you get?

3. Are there 12 in a dozen cakes? in a dozen chairs? in a dozen plates? in a dozen radios?



12 things = 1 dozen (doz.)

4. Which of these things are sold by the dozen?

| | | | |
|---------|----------|-----------|------------|
| cookies | oranges | ice cream | pears |
| cups | gasoline | flowers | paint |
| flour | honey | milk | sandwiches |

5. How many more or fewer than a dozen are

- | | | |
|---------------|-----------------|---------------|
| a. 20 apples? | c. 8 buttons? | e. 17 stamps? |
| b. 9 pencils? | d. 14 potatoes? | f. 10 rolls? |

Find out if farmers sell as many as 24 dozen eggs at one time.

Do You Know?

Progress Test 18 [W]

Copy and work.

| | | | | |
|------------|------------|------------|------------|------------|
| 1. 35 | 2. 87 | 3. 60 | 4. 17 | 5. 41 |
| <u>+46</u> | <u>-49</u> | <u>-56</u> | <u>+43</u> | <u>-19</u> |

| | | | | |
|------------|------------|-----------|------------|------------|
| 6. 53 | 7. 72 | 8. 83 | 9. 90 | 10. 7 |
| <u>+40</u> | <u>-48</u> | <u>-9</u> | <u>-60</u> | <u>+56</u> |

11. $19+3+25+25$

14. $19+15+29+24$

12. $40+8+45+4$

15. $8¢+4¢+48¢+19¢$

13. $21+38+6+18$

16. $\$0.10+\$0.07+\$0.34+\0.12

Problems for Careful Reading

Solving problems; providing missing data [O]

For each of these problems, tell what is missing:

1. Susan had 5 examples wrong on a test. How many examples did she get right?

2. Mrs. Burns paid 33¢ for 2 pounds of beans. How much money did she have left?

3. Mike has saved 33¢ for a ball. How much more must he save?

4. Tom is 8 years older than his brother. How old is his brother?

5. Jean spent 27¢ for a book. She spent what was left for paper. How much did the paper cost?

[W]

Make up numbers smaller than 50 and write problems for Ex. 1 to 5. Then work the problems.

Measuring Minutes

[O]

In one hour, the **minute hand** moves all around the clock from one little minute line to another.

1. On clock A, the minute hand has moved from the top to the first little line. How long did it take to move this distance? Clock A shows $_?$ minute past 12.

2. Count the spaces on clock B to find how many minutes it took the minute hand to move from 12 to 1. The time on clock B is $_?$ minutes past 12.

3. How long will it take the minute hand to move from any number to the next?

4. Count by 5's as you move your finger from one number to the next all around clock B. How many minutes is it from 12 all around the clock back to 12? Then how many minutes are there in an hour?

We tell time as **minutes past the hour** until the minute hand reaches half past the hour. When the minute hand is on the way to the top of the clock again, we tell time as **minutes before the hour**.

5. Count by 5's to find in how many minutes the minute hand will reach the top of the clock in

clock C;

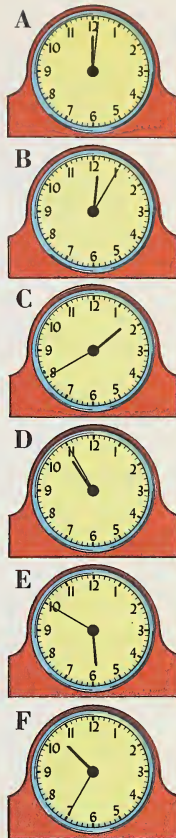
clock D;

clock E;

clock F.

60 minutes (min.) = 1 hour (hr.)

(one hundred eighty-nine) 189



Some New Fractions

Unit fractions to $\frac{1}{10}$ [O]

A



B



C



1. In circle A, each part is one half. We write it as $\frac{1}{2}$. The 2 in $\frac{1}{2}$ tells that there are $\frac{1}{2}$ equal parts.

2. Circle B is divided into $\frac{1}{4}$ equal parts. Each part is $\frac{1}{4}$. In $\frac{1}{4}$, what figure tells the number of equal parts?

3. In circle C, each part is $\frac{1}{3}$. The circle has been divided into $\frac{1}{3}$ equal parts. How does the fraction $\frac{1}{3}$ tell this?

Here are some new fractions:

$\frac{1}{5}$ (one fifth)

$\frac{1}{7}$ (one seventh)

$\frac{1}{9}$ (one ninth)

$\frac{1}{6}$ (one sixth)

$\frac{1}{8}$ (one eighth)

$\frac{1}{10}$ (one tenth)

D



4. To give $\frac{1}{5}$ of a pie to each boy, you must divide it into $\frac{1}{5}$ equal parts. Why?

5. Into how many equal parts would a pie be divided to give $\frac{1}{7}$? $\frac{1}{9}$? $\frac{1}{6}$? $\frac{1}{10}$? $\frac{1}{8}$?

E



6. Does circle D show tenths? Explain.

7. Does circle E show eighths? Explain.

8. Tell what fraction is shown by the black part of F; of G; of H; of I.

F



G



H



I



9. Ralph broke his candy bar into 6 equal parts. He gave Dot one part. Dot got $\frac{1}{6}$ of it.

10. At Cora's party, each girl got $\frac{1}{10}$ of the cake. Cora had divided it into $\frac{1}{10}$ equal parts.

11. Mrs. Ball cut a ribbon into 5 equal parts. Each part was $\frac{1}{5}$ of the ribbon.

12. For each boy to have $\frac{1}{8}$ of an orange, the orange would have to be cut into $\frac{1}{8}$ equal parts.

"Fraction" means **"broken part."**

Is fraction a good name for such numbers as $\frac{1}{8}$, $\frac{1}{5}$, and $\frac{1}{3}$? Why?



Right or Wrong? Prove It

[O]

1. Fred said to Dick and Mike, "Let's divide the candy bar and each take one half."

2. A hen weighs 5 pounds standing on one leg. Then standing on both legs, she must weigh 10 pounds.

3. Sally weighs 60 pounds. Her brother Jim weighs 15 pounds less, or 75 pounds.

4. Jean earned 55¢ and paid 70¢ of it for her mother's birthday present.

5. Sue bought 2 pounds of butter and 12 ounces of beans. The beans weighed more than the butter.



Helping at Home

Selecting the process [W]

After the numbers 1 to 7 on your paper, write "A." if you are to add or "S." if you are to subtract in the problem. Do not solve.

1. Nan washed dishes four days. She earned 12¢, 10¢, 14¢, and 9¢, or how much in all?

2. One night she washed 35 dishes, and the next night 28. She washed how many more the first night than the second?

3. One night Nan washed 8 plates, 6 cups, and 26 other dishes, or how many dishes in all?

4. It took Nan 28 minutes to wash the dishes. She worked how many minutes less than an hour?

HELPER: 1 hour = 60 minutes.

5. Nan's brother, Sam, helped his father. He earned 73¢ one week. Part of his money was a quarter and the rest, $-\text{?}-\text{¢}$, was in other coins.

6. Sam saved 40¢ of his 73¢. He spent the rest of it, or $-\text{?}-\text{¢}$.

7. The week Sam earned 73¢, Nan earned 39¢. That week Nan earned $-\text{?}-\text{¢}$ less than Sam.

If it is hard to tell when to add or subtract, read the top of page 108. Then solve (work) the problems above.

To Keep in Practice

[W]

Copy and work Ex. 1 to 23.

- | | | |
|------------------------|-----------------------|---------------|
| 1. $46 + 39$ | 6. $90 - 7$ | 11. $7 + 42$ |
| 2. $45 + 24$ | 7. $89 - 36$ | 12. $87 - 29$ |
| 3. $92 - 47$ | 8. $39 + 36$ | 13. $98 - 78$ |
| 4. $58 - 36$ | 9. $71 - 65$ | 14. $53 + 37$ |
| 5. $28 + 29$ | 10. $53 - 19$ | 15. $73 - 5$ |
| 16. $16 + 18 + 9 + 18$ | 20. $\$0.81 - \0.46 | |
| 17. $\$0.74 + \0.18 | 21. $\$0.28 + \0.62 | |
| 18. $53 + 7 + 9 + 27$ | 22. $\$0.72 - \0.29 | |
| 19. $9 + 8 + 38 + 28$ | 23. $\$0.55 - \0.30 | |

Now in Ex. 1 to 5 above, turn the examples around.
 For Ex. 1 write, " $46 + 39 = 85$, so $85 = 46 + 39$."
 For Ex. 3 write, " $92 - 47 = 45$, so $45 = 92 - 47$."

Oral Practice

Say the answers by rows and by columns.

| | a | b | c | d | e | f | g | h |
|----|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 1. | 64 | 88 | 40 | 51 | 79 | 44 | 32 | 27 |
| | <u>-4</u> | <u>-7</u> | <u>+8</u> | <u>+7</u> | <u>-5</u> | <u>-3</u> | <u>+6</u> | <u>-6</u> |
| 2. | 37 | 84 | 36 | 68 | 72 | 97 | 42 | 86 |
| | <u>-8</u> | <u>+5</u> | <u>-6</u> | <u>-5</u> | <u>+5</u> | <u>-7</u> | <u>+7</u> | <u>-5</u> |
| 3. | 52 | 63 | 71 | 19 | 83 | 25 | 35 | 53 |
| | <u>-8</u> | <u>+9</u> | <u>-4</u> | <u>+4</u> | <u>-8</u> | <u>+9</u> | <u>-9</u> | <u>-7</u> |
| 4. | 25 | 47 | 62 | 36 | 75 | 51 | 28 | 83 |
| | <u>-7</u> | <u>+9</u> | <u>-4</u> | <u>+7</u> | <u>-8</u> | <u>+9</u> | <u>+7</u> | <u>-4</u> |

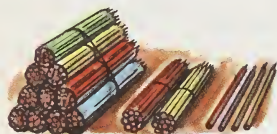


Three-Place Numbers

Meaning [O]

1. Tim said, "It's easy to count pencils in bundles of 10." Tell how Tim counted: 10, 20, 30, -?-, -?-, -?-, -?-, -?-, -?-, -?-, -?-, 120, 121, 122, -?-, -?..

2. Jack said, "It's even easier to count them if I put the ten 10's together in a hundred-bundle." How many hundred-bundles are there in the picture at the left? How many ten-bundles? How many ones?



3. 1 hundred and 2 tens and 4 ones equal $100 + 20 + 4$ pencils in all.

$$100 + 20 + 4 = ? \longrightarrow$$

In 124, the 4 in one's place means 4 ones. The 2 in ten's place means 2 tens, or 20. The 1 in hundred's place means 1 hundred, or 100.

The number 124 has three places. It is read "one hundred twenty-four."

| Hundreds | Tens | Ones |
|---------------|---------------|---------------|
| 1 | 0 | 0 |
| | 2 | 0 |
| $\frac{+}{1}$ | $\frac{-}{2}$ | $\frac{4}{4}$ |

Read Ex. 4 to 8. Ex. 4 is read "four hundred seven." Because 0 is in ten's place, we do not say the tens.

4. 407 5. 745 6. 603 7. 590 8. 237

Three-place numbers tell how many hundreds, tens, and ones.

194 (one hundred ninety-four)

Read each number in rows 9 to 11. Tell how many hundreds, tens, and ones there are in each number.

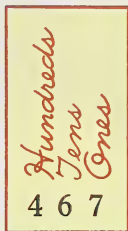
| | a | b | c | d | e | f | g |
|-----|-----|-----|-----|-----|-----|-----|-----|
| 9. | 587 | 675 | 359 | 834 | 763 | 248 | 496 |
| 10. | 807 | 596 | 260 | 748 | 485 | 905 | 679 |
| 11. | 673 | 850 | 584 | 907 | 266 | 395 | 702 |

We show the meaning of a number in more than one way. 467 means:

a. 4 hundreds and 6 tens and 7 ones,

or $400 + 60 + 7$

b. 46 tens and 7 ones, or $460 + 7$



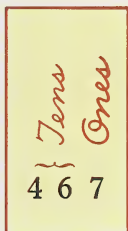
Say the missing words or numbers.

12. $835 =$ a. 8 $_?$ and 3 $_?$ and 5 $_?$,

or $800 + _? + _?$

b. 83 $_?$ and 5 $_?$,

or $830 + _?$



13. $709 =$ a. $_?$ hundreds and 9 $_?$,

or $700 + _?$

b. $_?$ tens and $_?$ ones, or $_? + _?$

[W]

Write two meanings for each of these:

14. 247 16. 934 18. 710 20. 824

15. 608 17. 510 19. 462 21. 700

Write in figures the numbers which mean

22. 52 tens + 3 ones. 25. 2 hundreds + 4 ones.

23. 9 hundreds + 5 ones. 26. 80 tens + 0 ones.

24. 1 hundred + 28 ones. 27. 2 hundreds + 8 ones.

(one hundred ninety-five) **195**



Adding Three-Place Numbers Is Easy

[O]

1. The truck driver left 300 copies of one paper and 200 copies of another. If the paper boy sells them all, how many papers will he sell?

Put your finger on each bundle of papers in the picture and count, "1 hundred, 2 hundred, -?-, -?-, -?-"

You can find the sum by adding hundreds.

3 hundreds and 2 hundreds = 5 hundreds

Or you can find the sum by adding 300 and 200.

$$300 + 200 = 500, \quad \text{or} \quad \begin{array}{r} 300 \\ +200 \\ \hline 500 \end{array}$$

Say the sums for Ex. 2 to 7.

| | | | | | |
|-------------|-------------|-------------|-------------|-------------|-------------|
| 2. 100 | 3. 100 | 4. 200 | 5. 300 | 6. 500 | 7. 400 |
| <u>+300</u> | <u>+600</u> | <u>+700</u> | <u>+400</u> | <u>+200</u> | <u>+200</u> |

You can add hundreds like ones.

8. The paper boy sold only 254 papers of one kind and 132 of the other, or how many in all? Boxes A and B show two ways to add 254 and 132.

Tell how to finish the work in box A.

| A | B |
|--|---|
| 2 hundreds and 5 tens and 4 ones | <div>Hundreds Tens Ones</div> 254 |
| <u>+ 1 hundred and 3 tens and 2 ones</u> | <u>+ 132</u> |
| ? and ? and ? , or - ? - | 386 |

For the short way, study box B. Add downward first ones, then tens, then hundreds, as below.

Ones: *Think*, “6” ($4 + 2 = 6$). In what place in the sum do you write “6”?

Tens: *Think*, “8” ($5 + 3 = 8$). In what place in the sum do you write “8”?

Hundreds: *Think*, “3” ($2 + 1 = 3$). In what place in the sum do you write “3”?

Check by adding upward: $2 + 4$; $3 + 5$; $1 + 2$.

In row 9, explain the work for each example.

| a | b | c | d | e | f |
|--------------|---------------|--------------|--------------|---------------|---------------|
| 9. 230 | \$3.75 | 422 | 284 | \$3.58 | \$2.45 |
| <u>+ 562</u> | <u>+ 2.03</u> | <u>+ 338</u> | <u>+ 407</u> | <u>+ 5.27</u> | <u>+ 6.48</u> |
| 792 | \$5.78 | 760 | 691 | \$8.85 | \$8.93 |

For row 10, tell which sums are wrong.

| | | | | | |
|--------------|---------------|--------------|--------------|---------------|---------------|
| 10. 764 | \$2.09 | 127 | 448 | \$7.16 | \$3.05 |
| <u>+ 104</u> | <u>+ 2.57</u> | <u>+ 855</u> | <u>+ 323</u> | <u>+ 2.08</u> | <u>+ 6.73</u> |
| 878 | \$4.66 | 972 | 861 | \$9.24 | \$9.88 |

Written Practice in Addition

Carrying a ten

Copy and write the sums. Check your work.

| | a | b | c | d | e | f | g |
|----|--------------------|--------------------|--------------------|--------------------|--------------------|------------------------|------------------------|
| 1. | 818 <u>+102</u> | 635 <u>+127</u> | 454 <u>+228</u> | 374 <u>+305</u> | 514 <u>+205</u> | \$7.36 <u>+2.10</u> | \$2.69 <u>+2.18</u> |
| 2. | 447 <u>+127</u> | 583 <u>+409</u> | 328 <u>+26</u> | 456 <u>+413</u> | 609 <u>+207</u> | \$5.43 <u>+0.36</u> | \$3.55 <u>+3.29</u> |
| 3. | 739 <u>+229</u> | 253 <u>+118</u> | 424 <u>+415</u> | 655 <u>+18</u> | 809 <u>+106</u> | \$3.48 <u>+2.37</u> | \$4.48 <u>+3.29</u> |
| 4. | 757 <u>+138</u> | 129 <u>+114</u> | 566 <u>+407</u> | 404 <u>+102</u> | 247 <u>+239</u> | \$6.09 <u>+2.03</u> | \$6.54 <u>+3.07</u> |

 **Extra Practice.** Work Extra Practice Set 42.

To Keep in Practice

[W]

Copy, and find the answers. Check your work.

| | | | | | |
|---------------------|---------------------|---------------------|----------------------|------------------------|------------------------|
| 1. 90 <u>-38</u> | 4. 91 <u>-66</u> | 7. 78 <u>-56</u> | 10. 72 <u>-59</u> | 13. 83¢ <u>-37¢</u> | 16. 64¢ <u>-29¢</u> |
| 2. 89 <u>-42</u> | 5. 63 <u>-5</u> | 8. 69 <u>-39</u> | 11. 94 <u>-86</u> | 14. 72¢ <u>-27¢</u> | 17. 53¢ <u>-16¢</u> |
| 3. 91 <u>-44</u> | 6. 67 <u>-17</u> | 9. 63 <u>-24</u> | 12. 70 <u>-47</u> | 15. 85¢ <u>-6¢</u> | 18. 46¢ <u>-38¢</u> |

19. $29 + 12 + 18 + 10$

21. $36¢ + 19¢ + 21¢ + 18¢$

20. $12 + 6 + 44 + 8$

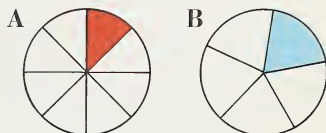
22. $\$0.24 + \$0.09 + \$0.27$

Do You Know?

Progress Test 19 [W]

Write the numbers 1 to 19 on your paper. Then write only the words or numbers that are missing below.

1. Every hour has _?_ minutes.
 2. In 762, the 7 is in _?_ place.
 3. In 762, there are _?_ tens in all.
 4. Every week has _?_ days.
 5. We write "hour" the short way as _?_.
 6. In circle A, the red part is _?_ of the circle.
 7. In circle B, the blue part is _?_ of the circle.
 8. Every yard has _?_ feet.
 9. At quarter past two o'clock, the minute hand is on the figure _?_.
 10. When December 1 is on Monday, December 8 is on _?_.
 11. _?_ ounces make 1 pound.
 12. Draw a line as long as your finger inch.
- Minutes, hours, days, weeks, or what?
13. You should have 10 _?_ of sleep each night.
 14. Sam's father is 22 _?_ older than Sam.
 15. Mrs. Brown gets lunch in 45 _?_.
 16. The school year has 10 _?_.
 17. It takes a big tree many _?_ to grow.
 18. Susan dresses in 15 _?_.
 19. Sam played on his horn for 1 _?_.





How Many Marbles?

Carrying a hundred [O]

1. Mike had 56 marbles in his pockets and 72 marbles in a bag. How many marbles had he in all? $56 + 72 = ?$

Study the work in box A.

A

$$\begin{array}{r} 56 \\ + 72 \\ \hline 128 \end{array}$$

Add ones: $6 + 2 = ?$ Write "8" in $_? _$ place in the sum.

Add tens: $5 + 7 = ?$ Then *think*,
12 tens = 1 hundred and 2 tens.

Write "2" in $_? _$ place and "1" in $_? _$ place in the sum.

B

$$\begin{array}{r} 1 \\ 173 \\ + 40 \\ \hline 213 \end{array}$$

2. Sam had 173 marbles. He bought 40 more. Then he had how many marbles?

Explain the work in box B.

Explain the additions in Ex. 3 to 7.

| | | | | | | | | | |
|----|------------|----|------------|----|------------------|----|---------------------|----|---------------------|
| 3. | 72 | 4. | 87 | 5. | ¹ 427 | 6. | ¹ \$3.34 | 7. | ¹ \$3.62 |
| | +36 | | +72 | | +180 | | +3.85 | | +0.95 |
| | <u>108</u> | | <u>159</u> | | <u>607</u> | | <u>\$7.19</u> | | <u>\$4.57</u> |

When the sum of the ten's figures means
10 tens or more, you carry a hundred.

You carry hundreds just as you carry tens.

200 (two hundred)

8 to 14. Copy these numbers. Add 72 to each one.
 394 163 282 504 450 375 241

15 to 21. Copy each number above and add 293.

22 to 28. Copy each number above and add 484.

➤ **Extra Practice.** Work Set 43.

Making Subtraction Problems

Help in problem-solving [W]

Write subtraction questions to make problems. After each question write “number left” or “number gone” or “other part” or “difference” to show the kind of question you wrote. Do not solve now.

1. The school bought 96 bottles of milk yesterday. Today they bought 89 bottles.

2. Sam has finished page 46 of his book. His book has 90 pages.

3. Nan cut out 43 paper dolls. Jean cut out 68.

4. Mike bought 50 pounds of dog food. He has given 35 pounds of it to his dog.

5. Thirty of Mr. Brown's 70 hens are not laying.

6. The man at the pet shop sold all but 16 of his 82 canaries.

7. Mrs. Brown has given away 48 of the 65 flowers she picked in her garden.

8. Mike played his horn an hour yesterday. Today he played 45 minutes.

Practice in Adding

[W]

Write sums on folded paper. Check your work.

| | a | b | c | d | e | f | g |
|----|-------------|-------------|-------------|-------------|-------------|--------------|--------------|
| 1. | 208 | 45 | 442 | 643 | 290 | \$0.79 | \$6.41 |
| | <u>+649</u> | <u>+346</u> | <u>+535</u> | <u>+307</u> | <u>+498</u> | <u>+4.15</u> | <u>+1.96</u> |
| 2. | 203 | 589 | 873 | 117 | 632 | \$1.46 | \$1.25 |
| | <u>+406</u> | <u>+203</u> | <u>+95</u> | <u>+390</u> | <u>+277</u> | <u>+5.18</u> | <u>+1.09</u> |
| 3. | 27 | 16 | 8 | 24 | 29 | \$0.40 | \$0.14 |
| | 18 | 9 | 20 | 12 | 8 | 0.19 | 0.28 |
| | 13 | 8 | 8 | 15 | 2 | 0.08 | 0.12 |
| | <u>+16</u> | <u>+2</u> | <u>+27</u> | <u>+48</u> | <u>+37</u> | <u>+0.16</u> | <u>+0.27</u> |

Practice in Subtracting

[W]

Write remainders on folded paper. Check.

| | a | b | c | d | e | f | g | h |
|----|------------|------------|------------|------------|------------|-------------|--------------|--------------|
| 1. | 90 | 46 | 71 | 83 | 97 | 74¢ | \$0.62 | \$0.43 |
| | <u>-28</u> | <u>-30</u> | <u>-48</u> | <u>-64</u> | <u>-27</u> | <u>-49¢</u> | <u>-0.55</u> | <u>-0.17</u> |
| 2. | 26 | 89 | 55 | 60 | 56 | 95¢ | \$0.95 | \$0.88 |
| | <u>-19</u> | <u>-47</u> | <u>-28</u> | <u>-37</u> | <u>-17</u> | <u>-45¢</u> | <u>-0.56</u> | <u>-0.60</u> |
| 3. | 83 | 31 | 74 | 89 | 92 | 57¢ | \$0.80 | \$0.73 |
| | <u>-36</u> | <u>-17</u> | <u>-36</u> | <u>-19</u> | <u>-38</u> | <u>-19¢</u> | <u>-0.79</u> | <u>-0.25</u> |

Copy each example and write the number for **n**.

4. $52 - n = 5$ 6. $44 - 39 = n$ 8. 81 minus 25 = n
 5. $70 - 26 = n$ 7. $74 - n = 26$ 9. 27 minus $n = 6$

Stories about Problems

Help in solving A. and S. problems [O]

It may help you to solve a problem if first you try to tell the story in your own words.

1. At a class party there were 21 boys and 24 girls. That was how many children in all?

You might tell the story of the problem like this: "Our class had a party. Before the games began, the boys were in one group and the girls in another. I counted 21 boys and 24 girls. Then I wanted to know how many children there were altogether."

Tell word stories for Ex. 2 to 6.

2. Use the picture at the right. In your story, ask how many more steps Bob must climb to get to the top. Count the top one.

3. Mother made 28 sandwiches. She put jelly in 6 of them and egg in the others. How many were egg sandwiches?

4. Four of the 36 oranges we got at the store were not good. How many oranges were good?

5. Tom has 25 green stamps. Dick has 3. How many more green stamps has Tom than Dick?

6. Aunt Mary used 8 eggs for a cake, 2 eggs for cookies, and 4 eggs for other things. How many eggs did Aunt Mary use altogether?



[W]

Now write your work for the problems.



Carrying a Ten and a Hundred

[O]

On an airplane, Ruth flew 549 miles with Uncle Jim and 298 miles alone. How far did she fly in all? $549 + 298 = ?$

Study the work. Are there 17 ones? Do you **carry a ten**? Why? Are there 14 tens? Do you **carry a hundred**? Why?

| Hundreds | Tens | Ones |
|----------------|----------------|------|
| ¹ 5 | ¹ 4 | 9 |
| +2 | 9 | 8 |
| 8 | 4 | 7 |

Explain the work in row 1.

| a | b | c | d | e | f |
|-------------------------|----------------------|----------------------|---------------------|----------------------|-------------------------|
| ¹¹ 1. 316 | ¹¹ 197 | ¹¹ 241 | ¹¹ 87 | ¹¹ 345 | ¹¹ \$2.47 |
| +287 | +525 | +179 | +513 | +198 | +0.56 |
| <u>603</u> | <u>722</u> | <u>420</u> | <u>600</u> | <u>543</u> | <u>\$3.03</u> |

Say the missing figures in row 2.

| | | | | | |
|------------|------------|------------|------------|------------|---------------|
| 2. 375 | 174 | 408 | 233 | 259 | \$0.78 |
| +496 | +129 | +193 | +279 | +87 | +1.54 |
| <u>?71</u> | <u>3?3</u> | <u>6?1</u> | <u>?12</u> | <u>3?6</u> | <u>\$2.?2</u> |

Tell which sums are wrong in row 3.

| | | | | | |
|------------|------------|------------|------------|------------|---------------|
| 3. 653 | 238 | 419 | 59 | 197 | \$4.08 |
| +57 | +167 | +84 | +395 | +108 | +1.98 |
| <u>700</u> | <u>295</u> | <u>503</u> | <u>344</u> | <u>295</u> | <u>\$6.06</u> |

Sometimes you carry both a ten and a hundred.

Copy and write answers. In some examples you carry once. In others, you carry more than once.

| | a | b | c | d | e | f |
|----|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| 4. | 408 <u>+392</u> | 567 <u>+134</u> | 726 <u>+53</u> | 509 <u>+238</u> | 175 <u>+824</u> | 78 <u>+596</u> |
| 5. | 743 <u>+135</u> | 190 <u>+428</u> | 524 <u>+254</u> | 484 <u>+428</u> | 89 <u>+709</u> | 467 <u>+270</u> |
| 6. | 27 <u>+477</u> | 636 <u>+46</u> | 429 <u>+96</u> | 393 <u>+159</u> | 260 <u>+640</u> | 216 <u>+362</u> |
| 7. | 739 <u>+78</u> | 269 <u>+253</u> | 25 <u>+943</u> | 126 <u>+586</u> | 103 <u>+787</u> | 427 <u>+179</u> |

► **Extra Practice.** Work Sets 44 and 45.

To Keep in Practice

1 to 6. Add 346 to each number below.

407 273 469 298 175 340

7 to 12. Add 239 to each number above.

13 to 19. From each number below, subtract 59.

80 92 73 86 97 84 71

20 to 26. From each number above, subtract 48.

Copy in columns. Add and check.

- | | | |
|-------------------|------------------|--------------------|
| 27. 20, 16, 8, 19 | 31. 41¢, 6¢, 8¢ | 35. 58, 0, 20, 4 |
| 28. 12, 30, 42, 5 | 32. 22¢, 7¢, 4¢ | 36. 26, 32, 28, 13 |
| 29. 37, 9, 18, 24 | 33. 42, 0, 12, 9 | 37. 48, 9, 9, 28 |
| 30. 5¢, 30¢, 9¢ | 34. 4, 6, 28, 27 | 38. 16, 16, 27, 36 |



Joe's Stamp Book

Problems without numbers. [W]

Write only "A." or "S."

1. Joe knows the number of pages in his stamp book and the number of pages he has filled. How can he tell the number of pages to be filled? A. or S.?

2. He knows how many old and how many new stamps he has. How can he tell how many he has in all? A. or S.?

3. Joe knows how many stamps he has and how many Tim has. How can he tell how many more or fewer he has than Tim? A. or S.?

4. How can Joe tell how many stamps he and Tim have together? A. or S.?

5. Joe knows how many stamps he bought and how many of them are in his book. How can he tell how many are not in the book? A. or S.?

6. He knows how many red stamps he has just bought and how many he had. How can he tell how many red stamps he has in all? A. or S.?

7. He knows how many stamps he has and how many he had. How can he tell how many are lost? A. or S.?

8. Joe knew how many brown stamps he had and how many he threw away. How can he tell how many he still has? A. or S.?

Do You Know?

Progress Test 20 [W]

Write answers for rows 1 to 3 on folded paper.

| | a | b | c | d | e | f |
|----|-------------|-------------|-------------|-------------|--------------|--------------|
| 1. | 73 | 87 | 582 | 63¢ | \$0.98 | \$0.98 |
| | <u>+864</u> | <u>-48</u> | <u>+249</u> | <u>+25¢</u> | <u>-0.60</u> | <u>+3.83</u> |
| 2. | 405 | 203 | 489 | 72¢ | \$0.79 | \$1.70 |
| | <u>+198</u> | <u>+705</u> | <u>+42</u> | <u>-39¢</u> | <u>+0.21</u> | <u>+4.69</u> |
| 3. | 39 | 19 | 12 | 3¢ | \$0.23 | \$0.48 |
| | 26 | 37 | 44 | 35¢ | 0.04 | 0.10 |
| | <u>+28</u> | <u>+38</u> | 8 | 4¢ | 0.08 | 0.04 |
| | | | <u>+19</u> | <u>+17¢</u> | <u>+0.55</u> | <u>+0.20</u> |

Write "Yes" or "No" to answer Ex. 4 to 12.

- Do you carry hundreds like tens?
- Does it take an hour to read this page?
- Do you divide a thing into 9 equal parts to find $\frac{1}{9}$ of it?
- Do a dozen eggs weigh 50 pounds?
- In the number 749 are there 74 tens in all?
- Are there 60 minutes in 1 hour?
- Is 20 yards a long distance to walk?
- Do you carry a hundred when the sum of the ones is 10 or more?
- Because $86 + 12 = 98$, does $98 = 86 + 12$?

Subtracting Larger Numbers

3-place numbers; no borrowing [O]

1. There were only 600 straws for school milk. After Mary was given 200 straws, how many were left?

6 hundreds minus 2 hundreds = 4 hundreds

Another way is to write the work with figures.

$$600 - 200 = 400 \quad \text{or} \quad \begin{array}{r} 600 \\ -200 \\ \hline 400 \end{array}$$

Say the remainders for Ex. 2 to 6.

| | | | | |
|--------------|--------------|--------------|--------------|--------------|
| 2. 700 | 3. 900 | 4. 600 | 5. 800 | 6. 900 |
| <u>- 300</u> | <u>- 600</u> | <u>- 500</u> | <u>- 400</u> | <u>- 500</u> |

You can subtract hundreds like ones.

7. Of the 538 people at the school play, 310 were parents. How many were not parents?

Finish and explain the work in box A.

B

Hundreds
Tens
Ones

5 3 8

- 3 1 0

2 2 8

A

5 hundreds and 3 tens and 8 ones

- 3 hundreds and 1 ten and 0 ones

2 ? and ? tens and ? ones, or - ? -

8. For the short way of subtracting, study box B.

Ones: *Think*, "8" ($8 - 0 = 8$).

Tens: *Think*, "2" ($3 - 1 = 2$).

Hundreds: *Think*, "2" ($5 - 3 = 2$).

Check by adding: $8 + 0 = ?$, $2 + 1 = ?$, $2 + 3 = ?$

Explain this work:

$$\begin{array}{r} 9. \quad 746 \\ - 312 \\ \hline 434 \end{array}$$

$$\begin{array}{r} 10. \quad 239 \\ - 205 \\ \hline 34 \end{array}$$

$$\begin{array}{r} 11. \quad 176 \\ - 41 \\ \hline 135 \end{array}$$

$$\begin{array}{r} 12. \quad 329 \\ - 7 \\ \hline 322 \end{array}$$

Borrowing a ten

13. We have a school play every year. Last year 652 people came to it. This year there were 538. How many more were there last year than this year?

| C | 4 (12) | D |
|--|--------|---|
| $\begin{array}{r} 652 = 600 \text{ and } \cancel{52} \\ - 538 = -500 \text{ and } 38 \\ \hline 100 \text{ and } 14, \text{ or } 114 \end{array}$ | | $\begin{array}{r} 652 \\ - 538 \\ \hline 114 \end{array}$ <p style="text-align: right;">↑ Check</p> |

You know how to borrow in subtracting 2-place numbers. Box C changes 652 and 538 so you can work with 2-place numbers as you **borrow a ten**. Explain.

Check by adding, as shown in box D.

Row 14: Explain the work. Row 15: Copy examples with wrong answers and work. Row 16: Copy and work.

| a | b | c | d 4 (10) | e 3 (15) | f 6 (12) |
|---|---|--|--|---|---|
| $\begin{array}{r} 14. \quad 578 \\ - 326 \\ \hline 252 \end{array}$ | $\begin{array}{r} 689 \\ - 73 \\ \hline 616 \end{array}$ | $\begin{array}{r} 785 \\ - 712 \\ \hline 73 \end{array}$ | $\begin{array}{r} \cancel{250} \\ - 147 \\ \hline 103 \end{array}$ | $\begin{array}{r} \$4.\cancel{45} \\ - 3.36 \\ \hline \$1.09 \end{array}$ | $\begin{array}{r} \$2.\cancel{72} \\ - 2.43 \\ \hline \$0.29 \end{array}$ <p style="text-align: right;">[W]</p> |
| $\begin{array}{r} 15. \quad 469 \\ - 239 \\ \hline 230 \end{array}$ | $\begin{array}{r} 510 \\ - 108 \\ \hline 402 \end{array}$ | $\begin{array}{r} 786 \\ - 69 \\ \hline 727 \end{array}$ | $\begin{array}{r} 832 \\ - 808 \\ \hline 34 \end{array}$ | $\begin{array}{r} \$6.77 \\ - 1.65 \\ \hline \$5.02 \end{array}$ | $\begin{array}{r} \$9.84 \\ - 5.53 \\ \hline \$4.21 \end{array}$ |
| $\begin{array}{r} 16. \quad 751 \\ - 348 \\ \hline \end{array}$ | $\begin{array}{r} 972 \\ - 424 \\ \hline \end{array}$ | $\begin{array}{r} 464 \\ - 59 \\ \hline \end{array}$ | $\begin{array}{r} 558 \\ - 504 \\ \hline \end{array}$ | $\begin{array}{r} \$6.73 \\ - 1.58 \\ \hline \end{array}$ | $\begin{array}{r} \$8.11 \\ - 2.06 \\ \hline \end{array}$ |

► **Extra Practice.** Work Sets 46 and 47.



Getting Ready for Christmas

Borrowing a hundred [O]

1. Mr. Brown had an order for 738 Christmas trees. The first day he and his helpers cut down 98 trees. How many trees were left still to be cut?

A

$$\begin{array}{r} \overset{6}{\cancel{7}}\overset{13}{\cancel{3}}8 \\ - 98 \\ \hline 640 \end{array}$$

Study the work in box A.

Subtract the ones: $(8 - 8)$.

Subtract the tens: Can you subtract 9 from 3? To subtract, change the groups. From the 7 hundreds borrow 1 hundred, or 10 tens.

Add those 10 tens to the 3 tens, to get 13 tens. *Think*, “ $13 - 9 = 4$.” Write “4” in $_?$ place in the answer.

Subtract the hundreds: Bring down the 6.

B

$$\begin{array}{r} \overset{6}{\cancel{7}}\overset{13}{\cancel{3}}8 \\ - 160 \\ \hline 578 \end{array}$$

2. After a week, only 160 of the 738 trees still had to be cut down. How many trees had been cut down?

Explain the work in box B.

When you cannot subtract the tens in a subtraction example, you borrow a hundred.

Borrow hundreds just as you borrow tens.

210 (two hundred ten)

Explain the subtraction in Ex. 3 to 7.

| | | | | |
|---|--|--|---|---|
| 3. ⁸ 9 ¹⁰ 7 | 4. ⁴ 5 ¹¹ 3 | 5. ³ 4 ¹³ 8 | 6. ⁶ \$7. ¹⁶ 0 | 7. ² \$3. ¹⁷ 7 |
| $\begin{array}{r} -694 \\ \hline 213 \end{array}$ | $\begin{array}{r} -483 \\ \hline 30 \end{array}$ | $\begin{array}{r} -86 \\ \hline 352 \end{array}$ | $\begin{array}{r} -4.80 \\ \hline \$2.80 \end{array}$ | $\begin{array}{r} -0.96 \\ \hline \$2.81 \end{array}$ |

Tell the missing hundred's figure in row 8.

| | a | b | c | d | e | f |
|----|---|--|---|---|---|---|
| 8. | 348 | 180 | 765 | 387 | 566 | \$4.29 |
| | $\begin{array}{r} -192 \\ \hline ?56 \end{array}$ | $\begin{array}{r} -70 \\ \hline ?10 \end{array}$ | $\begin{array}{r} -255 \\ \hline ?10 \end{array}$ | $\begin{array}{r} -196 \\ \hline ?91 \end{array}$ | $\begin{array}{r} -423 \\ \hline ?43 \end{array}$ | $\begin{array}{r} -3.73 \\ \hline \$?.56 \end{array}$ |

Which subtractions are wrong in row 9? Why?

| | | | | | | |
|----|--|---|---|---|--|---|
| 9. | 648 | 347 | 859 | 517 | 726 | \$9.43 |
| | $\begin{array}{r} -60 \\ \hline 688 \end{array}$ | $\begin{array}{r} -184 \\ \hline 263 \end{array}$ | $\begin{array}{r} -722 \\ \hline 137 \end{array}$ | $\begin{array}{r} -395 \\ \hline 122 \end{array}$ | $\begin{array}{r} -84 \\ \hline 742 \end{array}$ | $\begin{array}{r} -2.72 \\ \hline \$6.71 \end{array}$ |

[W]

Rows 10 to 13. Copy and write remainders.

| | | | | | | |
|-----|---|---|---|---|---|--|
| 10. | 847 | 235 | 419 | 698 | 535 | \$4.09 |
| | $\begin{array}{r} -57 \\ \hline \end{array}$ | $\begin{array}{r} -173 \\ \hline \end{array}$ | $\begin{array}{r} -238 \\ \hline \end{array}$ | $\begin{array}{r} -203 \\ \hline \end{array}$ | $\begin{array}{r} -164 \\ \hline \end{array}$ | $\begin{array}{r} -0.84 \\ \hline \end{array}$ |
| 11. | 468 | 247 | 538 | 459 | 728 | \$3.75 |
| | $\begin{array}{r} -396 \\ \hline \end{array}$ | $\begin{array}{r} -230 \\ \hline \end{array}$ | $\begin{array}{r} -251 \\ \hline \end{array}$ | $\begin{array}{r} -273 \\ \hline \end{array}$ | $\begin{array}{r} -95 \\ \hline \end{array}$ | $\begin{array}{r} -1.82 \\ \hline \end{array}$ |
| 12. | 509 | 796 | 915 | 427 | 734 | \$5.03 |
| | $\begin{array}{r} -477 \\ \hline \end{array}$ | $\begin{array}{r} -156 \\ \hline \end{array}$ | $\begin{array}{r} -23 \\ \hline \end{array}$ | $\begin{array}{r} -257 \\ \hline \end{array}$ | $\begin{array}{r} -243 \\ \hline \end{array}$ | $\begin{array}{r} -4.51 \\ \hline \end{array}$ |
| 13. | 417 | 509 | 368 | 826 | 419 | \$4.98 |
| | $\begin{array}{r} -145 \\ \hline \end{array}$ | $\begin{array}{r} -409 \\ \hline \end{array}$ | $\begin{array}{r} -308 \\ \hline \end{array}$ | $\begin{array}{r} -40 \\ \hline \end{array}$ | $\begin{array}{r} -376 \\ \hline \end{array}$ | $\begin{array}{r} -4.25 \\ \hline \end{array}$ |

► **Extra Practice.** Work Sets 48 and 49.

Our School Milk

Borrowing both a ten and a hundred [O]

A

$$\begin{array}{r} 325 \\ -136 \\ \hline ? \end{array}$$

B

$$\begin{array}{r} \overset{1}{\cancel{3}}\overset{15}{2}\cancel{5} \\ -136 \\ \hline 9 \end{array}$$

C

$$\begin{array}{r} \overset{2}{\cancel{3}}\overset{11}{\cancel{2}}\overset{15}{5} \\ -136 \\ \hline 189 \end{array}$$

1. Our school gets 325 bottles of milk a day. One milkman brought 136 bottles. How many will the other milkman bring?

Look at the work in box A. Can you subtract the ones? the tens? Why, or why not?

Box B. Borrow a ten to make 15 ones.

Box C. Borrow a hundred and change it to tens to make 11 tens in all.

Explain the work in boxes A, B, and C.

Explain Ex. 2 to 4.

$$\begin{array}{r} \overset{6}{\cancel{2}}\overset{11}{\cancel{2}}\overset{15}{5} \\ -488 \\ \hline 237 \end{array}$$

$$\begin{array}{r} \overset{3}{\cancel{4}}\overset{16}{\cancel{7}}\overset{18}{8} \\ -199 \\ \hline 279 \end{array}$$

$$\begin{array}{r} \overset{8}{\cancel{9}}\overset{12}{\cancel{3}}\overset{10}{0} \\ -686 \\ \hline 244 \end{array}$$

Sometimes you borrow both a ten and a hundred.

[W]

Copy and write remainders. Check.

| a | b | c | d | e | f |
|-------------|-------------|-------------|-------------|-------------|--------------|
| 5. 840 | 572 | 625 | 577 | 453 | \$8.29 |
| <u>-588</u> | <u>-299</u> | <u>-197</u> | <u>-479</u> | <u>-189</u> | <u>-4.39</u> |
| 6. 592 | 741 | 886 | 692 | 543 | \$7.81 |
| <u>-278</u> | <u>-65</u> | <u>-329</u> | <u>-554</u> | <u>-397</u> | <u>-4.86</u> |
| 7. 641 | 162 | 699 | 720 | 999 | \$3.29 |
| <u>-388</u> | <u>-97</u> | <u>-367</u> | <u>-236</u> | <u>-185</u> | <u>-0.53</u> |

Extra Practice. Work Sets 50 and 51.

Borrowing with 0 in Ten's Place

[O]

1. John's book has 306 pages. He has read 158 of them. How many more pages has he to read?

Box A. This example will be easy if you **think of 306 as 30 tens and 6 ones**. Then you borrow a ten from 30 tens. Explain the work in box A.

| | | | | |
|--|---|--|--|---|
| A | B | C | D | E |
| $\begin{array}{r} 29\text{ (16)} \\ 306 \\ -158 \\ \hline 148 \end{array}$ | $\begin{array}{r} 29\text{ (15)} \\ 305 \\ -246 \\ \hline 59 \end{array}$ | $\begin{array}{r} 79\text{ (14)} \\ 804 \\ -178 \\ \hline 626 \end{array}$ | $\begin{array}{r} 59\text{ (13)} \\ 603 \\ -365 \\ \hline 238 \end{array}$ | $\begin{array}{r} 49\text{ (17)} \\ \$5.07 \\ -4.59 \\ \hline \$0.48 \end{array}$ |

2. When Joe had read 246 of the 305 pages in his book, how many more pages had he to read?

Box B. Can you subtract the ones (6 from 5)? You can think of 305 as how many tens and ones? Then you can borrow a ten from how many tens? Now explain the rest of the work in box B.

3 to 5. Explain the subtractions in boxes C to E.

[W]

Copy and write remainders. Check.

| | a | b | c | d | e | f |
|----|--|--|--|--|--|--|
| 6. | $\begin{array}{r} 906 \\ -859 \\ \hline \end{array}$ | $\begin{array}{r} 503 \\ -134 \\ \hline \end{array}$ | $\begin{array}{r} 701 \\ -19 \\ \hline \end{array}$ | $\begin{array}{r} 904 \\ -877 \\ \hline \end{array}$ | $\begin{array}{r} \$6.02 \\ -5.88 \\ \hline \end{array}$ | $\begin{array}{r} \$4.04 \\ -0.65 \\ \hline \end{array}$ |
| 7. | $\begin{array}{r} 705 \\ -447 \\ \hline \end{array}$ | $\begin{array}{r} 402 \\ -225 \\ \hline \end{array}$ | $\begin{array}{r} 501 \\ -443 \\ \hline \end{array}$ | $\begin{array}{r} 890 \\ -45 \\ \hline \end{array}$ | $\begin{array}{r} \$9.02 \\ -0.73 \\ \hline \end{array}$ | $\begin{array}{r} \$8.01 \\ -2.92 \\ \hline \end{array}$ |

► **Extra Practice.** Work Set 53.



Betsy Takes a Trip

Borrowing; two zeros in minuend [O]

1. Betsy took a 300-mile trip in the car with her father. They stopped for lunch after they had gone 188 miles. How many miles did they still have to go?

Study the work in box A. To subtract the ones, you must borrow. The ten's figure is 0, and you cannot borrow from 0.

Think, "In 300 there are 30 tens. I borrow one of the 30 tens, leaving 29 tens, or 2 hundreds and 9 tens."

Explain the rest of the work in box A.

| A | B | C | D | E |
|--|--|--|---|--|
| $\begin{array}{r} 2\ 9\ \textcircled{10} \\ 300 \\ -188 \\ \hline 112 \end{array}$ | $\begin{array}{r} 7\ 9\ \textcircled{10} \\ 800 \\ -468 \\ \hline 332 \end{array}$ | $\begin{array}{r} 6\ 9\ \textcircled{10} \\ 700 \\ -356 \\ \hline 344 \end{array}$ | $\begin{array}{r} 6\ 9\ \textcircled{10} \\ 700 \\ -89 \\ \hline 611 \end{array}$ | $\begin{array}{r} 4\ 9\ \textcircled{10} \\ 500 \\ -268 \\ \hline 232 \end{array}$ |

2. $800 - 468 = ?$ Study the work in box B. Can you subtract the ones? Why are the 80 tens changed to 79 tens? Explain.

3 to 5. Explain the work in boxes C, D, and E.

Which subtractions below are wrong, and why?

| | a | b | c | d | e | f | g |
|----|--------|---------|-------|---------|-------|--------|---------|
| 6. | 700 | \$5.00 | 600 | \$9.00 | 400 | 500 | \$7.00 |
| | -354 | -4.36 | -87 | -3.52 | -76 | -359 | -0.64 |
| | 346 | \$1.74 | 513 | \$5.58 | 324 | 150 | \$6.46 |

Copy and subtract. Be careful with 0's!

| | a | b | c | d | e | f |
|-----|--|--|--|--|--|--|
| 7. | $\begin{array}{r} 702 \\ -417 \\ \hline \end{array}$ | $\begin{array}{r} 608 \\ -39 \\ \hline \end{array}$ | $\begin{array}{r} 801 \\ -748 \\ \hline \end{array}$ | $\begin{array}{r} 300 \\ -159 \\ \hline \end{array}$ | $\begin{array}{r} \$7.00 \\ -2.26 \\ \hline \end{array}$ | $\begin{array}{r} \$9.00 \\ -0.83 \\ \hline \end{array}$ |
| 8. | $\begin{array}{r} 600 \\ -377 \\ \hline \end{array}$ | $\begin{array}{r} 511 \\ -455 \\ \hline \end{array}$ | $\begin{array}{r} 517 \\ -88 \\ \hline \end{array}$ | $\begin{array}{r} 414 \\ -329 \\ \hline \end{array}$ | $\begin{array}{r} \$2.16 \\ -0.17 \\ \hline \end{array}$ | $\begin{array}{r} \$9.15 \\ -6.68 \\ \hline \end{array}$ |
| 9. | $\begin{array}{r} 570 \\ -169 \\ \hline \end{array}$ | $\begin{array}{r} 203 \\ -169 \\ \hline \end{array}$ | $\begin{array}{r} 800 \\ -342 \\ \hline \end{array}$ | $\begin{array}{r} 114 \\ -38 \\ \hline \end{array}$ | $\begin{array}{r} \$5.47 \\ -2.78 \\ \hline \end{array}$ | $\begin{array}{r} \$6.80 \\ -4.79 \\ \hline \end{array}$ |
| 10. | $\begin{array}{r} 722 \\ -478 \\ \hline \end{array}$ | $\begin{array}{r} 400 \\ -174 \\ \hline \end{array}$ | $\begin{array}{r} 806 \\ -118 \\ \hline \end{array}$ | $\begin{array}{r} 943 \\ -236 \\ \hline \end{array}$ | $\begin{array}{r} \$4.80 \\ -0.65 \\ \hline \end{array}$ | $\begin{array}{r} \$5.21 \\ -4.37 \\ \hline \end{array}$ |
| 11. | $\begin{array}{r} 200 \\ -125 \\ \hline \end{array}$ | $\begin{array}{r} 712 \\ -395 \\ \hline \end{array}$ | $\begin{array}{r} 400 \\ -287 \\ \hline \end{array}$ | $\begin{array}{r} 510 \\ -386 \\ \hline \end{array}$ | $\begin{array}{r} \$2.00 \\ -1.25 \\ \hline \end{array}$ | $\begin{array}{r} \$4.32 \\ -2.17 \\ \hline \end{array}$ |
| 12. | $\begin{array}{r} 500 \\ -384 \\ \hline \end{array}$ | $\begin{array}{r} 300 \\ -275 \\ \hline \end{array}$ | $\begin{array}{r} 610 \\ -587 \\ \hline \end{array}$ | $\begin{array}{r} 700 \\ -239 \\ \hline \end{array}$ | $\begin{array}{r} \$4.20 \\ -2.98 \\ \hline \end{array}$ | $\begin{array}{r} \$8.10 \\ -3.75 \\ \hline \end{array}$ |

► **Extra Practice.** Work Sets 55 and 56.

Do You Know?

Progress Test 21 [W]

Copy, and work.

- | | | | | |
|---|---|---|---|--|
| 1. $\begin{array}{r} 524 \\ -386 \\ \hline \end{array}$ | 2. $\begin{array}{r} 389 \\ -54 \\ \hline \end{array}$ | 3. $\begin{array}{r} 485 \\ -37 \\ \hline \end{array}$ | 4. $\begin{array}{r} 427 \\ +194 \\ \hline \end{array}$ | 5. $\begin{array}{r} \$8.30 \\ -2.57 \\ \hline \end{array}$ |
| 6. $\begin{array}{r} 742 \\ -567 \\ \hline \end{array}$ | 7. $\begin{array}{r} 238 \\ +464 \\ \hline \end{array}$ | 8. $\begin{array}{r} 940 \\ -756 \\ \hline \end{array}$ | 9. $\begin{array}{r} 628 \\ +243 \\ \hline \end{array}$ | 10. $\begin{array}{r} \$4.79 \\ -4.36 \\ \hline \end{array}$ |
11. $26 + 7 + 39 + 15$ 12. $20¢ + 36¢ + 18¢ + 24¢$
 13. $17 + 18 + 29 + 34$ 14. $43¢ + 8¢ + 8¢ + 24¢$

(two hundred fifteen) **215**

Do You Understand?

Test of Information and Meaning 5

Copy the example (A or B or C) in which you

1. carry only a hundred.

2. carry two times.

| A | B | C |
|--|--|--|
| $\begin{array}{r} 346 \\ +250 \\ \hline \end{array}$ | $\begin{array}{r} 427 \\ +182 \\ \hline \end{array}$ | $\begin{array}{r} 353 \\ +348 \\ \hline \end{array}$ |

| D | E | F |
|--|--|--|
| $\begin{array}{r} 734 \\ -184 \\ \hline \end{array}$ | $\begin{array}{r} 496 \\ -465 \\ \hline \end{array}$ | $\begin{array}{r} 652 \\ -279 \\ \hline \end{array}$ |

Copy the example (D or E or F) in which you

3. borrow only a hundred. 4. do not borrow at all.

5. Write an example in which you carry a hundred.

6. In $400 - 125$ do you borrow from 4 hundreds or from 40 tens?

7. Write the number which has

a. 50 tens and 6 ones; b. 7 hundreds and 5 ones.

Copy and write the missing word or number.

8. 24 hours = 1 _?_ 11. 1 yard = 3 _?_

9. 1 dozen = _?_ 12. 1 hour = _?_ minutes

10. 1 pound = 16 _?_ 13. 1 foot = _?_ inches

Write in figures.

14. one sixth

15. one tenth

16. one fifth

Write the time shown on each of these clocks:

17.

18.

19.

20.



Can You Solve Problems?

Problem Test 5

Write your work.

1. Our postman works at the office 85 minutes each morning and 75 minutes in the afternoon. How long is that each day?

2. Many times he has to carry 50 pounds of mail. When he has 35 pounds, he has how many pounds less than 50 pounds?

3. He carried 455 letters one morning and 368 letters in the afternoon. How many letters did he carry that day?

4. Of the 455 letters in the morning mail, 269 had 4¢ stamps. How many of that morning's letters had other stamps?

5. On three streets, the postman left 29, 37, and 26 letters. How many letters was that in all?

6. Last week he carried 246 papers. This week he carried 322 papers. How many more papers did he carry this week than last week?

7. The postman left the post office with 515 letters. By 3 o'clock, he had only 78 letters. How many letters had he then left along the way?

8. In November, the postman worked 168 hours. In December he worked 176 hours. How many more hours did he work in December than in November?

(two hundred seventeen) 217



Do You Make Mistakes?

Diagnostic Test 5

Write answers on folded paper.

| 1. | a | b | c | d | Study Pages | Practice Sets |
|----|--|---|---|---|-------------|--------------------------|
| | $\begin{array}{r} 400 \\ +300 \\ \hline \end{array}$ | $\begin{array}{r} 363 \\ +426 \\ \hline \end{array}$ | $\begin{array}{r} 287 \\ +306 \\ \hline \end{array}$ | $\begin{array}{r} \$5.34 \\ +0.29 \\ \hline \end{array}$ | 196-197 | 42 |
| 2. | $\begin{array}{r} 74 \\ +55 \\ \hline \end{array}$ | $\begin{array}{r} 86 \\ +90 \\ \hline \end{array}$ | $\begin{array}{r} 375 \\ +284 \\ \hline \end{array}$ | $\begin{array}{r} \$6.50 \\ +0.87 \\ \hline \end{array}$ | 200 | 43 |
| 3. | $\begin{array}{r} 427 \\ +269 \\ \hline \end{array}$ | $\begin{array}{r} 388 \\ +99 \\ \hline \end{array}$ | $\begin{array}{r} 517 \\ +286 \\ \hline \end{array}$ | $\begin{array}{r} \$0.89 \\ +2.24 \\ \hline \end{array}$ | 204 | 44, 45 |
| 4. | $\begin{array}{r} 700 \\ -500 \\ \hline \end{array}$ | $\begin{array}{r} 629 \\ -427 \\ \hline \end{array}$ | $\begin{array}{r} 542 \\ -238 \\ \hline \end{array}$ | $\begin{array}{r} \$2.95 \\ -1.67 \\ \hline \end{array}$ | 208-209 | 46, 47 |
| 5. | $\begin{array}{r} 448 \\ -174 \\ \hline \end{array}$ | $\begin{array}{r} 759 \\ -182 \\ \hline \end{array}$ | $\begin{array}{r} 618 \\ -486 \\ \hline \end{array}$ | $\begin{array}{r} \$1.36 \\ -0.96 \\ \hline \end{array}$ | 210 | 48, 49 |
| 6. | $\begin{array}{r} 550 \\ -289 \\ \hline \end{array}$ | $\begin{array}{r} 365 \\ -297 \\ \hline \end{array}$ | $\begin{array}{r} 500 \\ -95 \\ \hline \end{array}$ | $\begin{array}{r} \$3.06 \\ -1.59 \\ \hline \end{array}$ | 212-214 | 50, 51, 53, 55, 56 |
| 7. | $\begin{array}{r} 23 \\ 24 \\ 30 \\ +18 \\ \hline \end{array}$ | $\begin{array}{r} 16 \\ 32 \\ 21 \\ +8 \\ \hline \end{array}$ | $\begin{array}{r} 28 \\ 16 \\ 42 \\ +9 \\ \hline \end{array}$ | $\begin{array}{r} 8¢ \\ 27¢ \\ 46¢ \\ +15¢ \\ \hline \end{array}$ | 185-186 | 39, 40, 41 |

To Keep in Practice

A. and S. [W]

Copy and work Ex. 1 to 19. Watch the signs!

- | | | | | |
|--|--|--|--|--|
| 1. $\begin{array}{r} 508 \\ +417 \\ \hline \end{array}$ | 2. $\begin{array}{r} 724 \\ +148 \\ \hline \end{array}$ | 3. $\begin{array}{r} 649 \\ +236 \\ \hline \end{array}$ | 4. $\begin{array}{r} 837 \\ +149 \\ \hline \end{array}$ | 5. $\begin{array}{r} \$2.56 \\ +7.25 \\ \hline \end{array}$ |
| 6. $\begin{array}{r} 365 \\ +435 \\ \hline \end{array}$ | 7. $\begin{array}{r} 219 \\ +481 \\ \hline \end{array}$ | 8. $\begin{array}{r} 476 \\ +337 \\ \hline \end{array}$ | 9. $\begin{array}{r} 553 \\ +188 \\ \hline \end{array}$ | 10. $\begin{array}{r} \$4.72 \\ +4.59 \\ \hline \end{array}$ |
| 11. $\begin{array}{r} 420 \\ -215 \\ \hline \end{array}$ | 12. $\begin{array}{r} 605 \\ -297 \\ \hline \end{array}$ | 13. $\begin{array}{r} 842 \\ -328 \\ \hline \end{array}$ | 14. $\begin{array}{r} 700 \\ -367 \\ \hline \end{array}$ | 15. $\begin{array}{r} \$5.63 \\ -2.85 \\ \hline \end{array}$ |
| 16. $25 + 15 + 36$ | | 17. $\$0.16 + \$0.40 + \$0.17 + \0.23 | | |

How Well Can You Figure?

Computation Test 5

Copy and find the answers. Check your work.

- | | | | | |
|--|---|--|--|--|
| 1. $\begin{array}{r} 246 \\ +273 \\ \hline \end{array}$ | 2. $\begin{array}{r} 956 \\ -347 \\ \hline \end{array}$ | 3. $\begin{array}{r} 98 \\ +187 \\ \hline \end{array}$ | 4. $\begin{array}{r} 438 \\ -379 \\ \hline \end{array}$ | 5. $\begin{array}{r} \$3.00 \\ -0.74 \\ \hline \end{array}$ |
| 6. $\begin{array}{r} 325 \\ +474 \\ \hline \end{array}$ | 7. $\begin{array}{r} 708 \\ -389 \\ \hline \end{array}$ | 8. $\begin{array}{r} 548 \\ -67 \\ \hline \end{array}$ | 9. $\begin{array}{r} 864 \\ -305 \\ \hline \end{array}$ | 10. $\begin{array}{r} \$7.50 \\ -3.40 \\ \hline \end{array}$ |
| 11. $\begin{array}{r} 787 \\ -516 \\ \hline \end{array}$ | 12. $\begin{array}{r} 808 \\ +32 \\ \hline \end{array}$ | 13. $\begin{array}{r} 479 \\ -390 \\ \hline \end{array}$ | 14. $\begin{array}{r} 247 \\ +356 \\ \hline \end{array}$ | 15. $\begin{array}{r} \$1.05 \\ -0.97 \\ \hline \end{array}$ |

Copy in columns and add.

- | | |
|-----------------------|----------------------------|
| 16. 21, 9, 5, 8 | 21. 16¢, 12¢, 18¢, 14¢ |
| 17. 8, 6, 29, 27 | 22. 24, 0, 4, 38 |
| 18. 23, 20, 21, 25 | 23. 42, 5, 34, 7 |
| 19. 18, 17, 46, 8 | 24. \$0.04, \$0.23, \$0.06 |
| 20. 24¢, 9¢, 17¢, 28¢ | 25. \$0.10, \$0.09, \$0.49 |



Jack's Toy Soldiers

Introduction to multiplication [O]

1. In the large picture, how many groups of soldiers are there? Are they groups of like-things? Are the groups equal? How many soldiers are in each group?

2. To find how many soldiers there are in all,

You can count by 3's. 3, 6, ?, ?

Or, you can add 3's. $3 + 3 + 3 + 3 = ?$

How many 3's do you count or add? Why?

How many are four 3's? **Four 3's** are _?_.

3. Are the horses groups of like-things? There are _?_ equal groups with _?_ horses in each group. How many horses are there?

Count by 4's. 4, ?, ?

Add 4's instead of counting them. $4 + 4 + 4 = ?$

How many are three 4's? **Three 4's** are _?_.

4. Tom's big guns are in _?_ equal groups, with _?_ in each group. How many guns are there?

Count by 2's. 2, 4, 6, ?

Add 2's instead of counting them. $2 + 2 + 2 + 2 = ?$

How many are four 2's? **Four 2's** are _?_.

5. How many horses are in two groups?

$4 + 4 = ?$ **Two 4's** are _?_.

6. How many soldiers are there in three groups?

$3 + 3 + 3 = ?$ **Three 3's** are _?_.

7. How many guns are there in two groups?

$2 + 2 = ?$ **Two 2's** are _?_.

Planting Bulbs in Equal Groups

Introduction to multiplication [O]

1. Jean planted 2 bulbs in each of 3 dishes. Use the picture of Jean's bulbs to find how many she planted.

Count the bulbs by 2's.

Add 2's. $2 + 2 + 2 = ?$

Three 2's = ?



Jean's Bulbs



Kay's Bulbs

2. Kay planted 3 bulbs in each of 4 dishes. How many equal groups did she plant? How many were in each of the equal groups?

3. How many bulbs did Kay plant in all? *Think*, " $3 + 3 + 3 + 3 = ?$ " Now *think* the example this way: "**four 3's** = ?" To find the answer, add or count 3's.

4. How many bulbs will there be if Kay plants

a. 4 bulbs in each of 2 dishes?



b. 4 bulbs in each of 3 dishes?



c. 3 bulbs in each of 3 dishes?



5. Write Ex. a to c above in two ways. For Ex. a, write " $4 + 4 = 8$ " and "**two 4's** = 8."

[W]





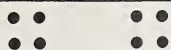
Ways to Find How Many in All

The meaning of multiplication [O]

Each box in row 1 shows three 5's. Explain.

In row 2, tell what belongs in boxes B and C.

In row 3, tell what belongs in boxes A and B.

| | A | B | C |
|-----|---|-----------------|----------------|
| 1. |  | $5 + 5 + 5$ | three 5's = 15 |
| 2. |  | ? | ? |
| 3. | ? | ? | four 2's = 8 |
| 4. | ? | $2 + 2$ | ? |
| 5. |  | ? | ? |
| 6. | ? | ? | two 3's = 6 |
| 7. | ? | $3 + 3 + 3 + 3$ | ? |
| 8. |  | ? | ? |
| 9. | ? | ? | three 2's = 6 |
| 10. | ? | $6 + 6$ | ? |
| 11. |  | ? | ? |

[W]

Copy and finish rows 4 to 11 above.

Copy Ex. 12 to 17 and write the totals. (Make dot pictures to help you if you need to.)

12. two 4's

14. two 5's

16. two 3's

13. four 3's

15. three 4's

17. three 5's

(two hundred twenty-three) 223

What Is Multiplying?

Meaning [O]

1. What is the sum of the four 2's in box A?

| A | B |
|-----------|-----------|
| 2 | 4 |
| 2 | 4 |
| 2 | <u>+4</u> |
| <u>+2</u> | ? |
| ? | |

Can you find how many in box A if you write the example this way:

four 2's = ?

2. The sum in box B is _?_. You add _?_ 4's, so you may write,

three 4's = ?

We may find the answer in box B by adding $4 + 4 + 4$. But it is easier to **know at once that** $\text{three } 4\text{'s} = 12$. This is **multiplying**. When we multiply we find how many in all. We call the answer the **product**.

[W]

Copy and add. Then write the example which shows multiplying. Ex. 3 is written, "three 2's = 6."

| | | | | | | | | | | | |
|----|-----------|----|-----------|----|-----------|----|-----------|----|-----------|----|-----------|
| 3. | 2 | 4. | 3 | 5. | 3 | 6. | 4 | 7. | 2 | 8. | 3 |
| | 2 | | 3 | | 3 | | <u>+4</u> | | 2 | | 3 |
| | <u>+2</u> | | 3 | | 3 | | | | 2 | | <u>+3</u> |
| | | | <u>+3</u> | | 3 | | | | 2 | | |
| | | | | | <u>+3</u> | | | | <u>+2</u> | | |

Ex. 9 to 17 are examples for multiplying. Write them as addition examples and add as in boxes A and B.

| | | |
|---------------|--------------|--------------|
| 9. two 2's | 12. five 4's | 15. two 4's |
| 10. three 2's | 13. two 3's | 16. five 3's |
| 11. four 3's | 14. five 2's | 17. four 4's |

To find how many in all, multiply instead of adding when groups or numbers are equal.

The answer is the product.



Our Candy Sale

Finding totals four ways [O]

Jean sold 3 bags of candy with 6 pieces in each bag.
How many pieces did she sell?

The box shows four ways to
find the answer. Explain each.

[W]

Solve Ex. 1 to 6. Write your
work for each problem four ways
as in the box.

(1) $\begin{array}{ccc} \bullet & \bullet & \bullet \\ \bullet & \bullet & \bullet \\ \bullet & \bullet & \bullet \end{array}$

(2) $6, 12, _? _$

(3) $6 + 6 + 6 = ?$

(4) **Three 6's = ?**

1. Mary cut a square pan of candy into 3 rows, with
3 pieces in each row. That made how many pieces?

2. Sue cut a pan of candy into 2 rows, with 6 pieces in
a row. That made how many pieces?

3. Mike bought 2 bags of candy. If there were 4 pieces
in each bag, he had how many pieces?

4. Sam gave 5¢ bags of candy to his two brothers. The
candy cost Sam how much?

5. Ann bought 3 bags, with 5 pieces of white candy in
each. She had how many white pieces?

6. Each bag Tom bought had 4 red candies. He
bought 3 bags, so he had how many red candies?

[O]

Did you add equal numbers? Did you multiply?

1.



2.



3.



4.



5.



6.



7.



Buying Toy Animals

M. facts for 2's [W]

1. How many toy dogs are on the first card? Copy and finish:

a. $2+2+2=?$ b. Three 2 's = ?

How many of these are on each card? Write your work as in Ex. 1.

2. Rabbits

5. Ducks

3. Cats

6. Chicks

4. Cows

7. Fish

Copy and write the products.

8. three 2 's

12. five 2 's

9. six 2 's

13. eight 2 's

10. nine 2 's

14. two 2 's

11. four 2 's

15. seven 2 's

[O]

16. Is it easier to think the addition "2 and 2 and 2 are 6," or the multiplication "three 2 's are 6"?

Multiplication is a short way to add equal groups of like-things.

Ways to Write Multiplication Facts

[W]

Two scoops of ice cream to a cone! Four for 2 cones, six for 3 cones! Count the scoops by 2's. Say, "2, 4, 6." So **three 2's are 6.**

Three 2's are 6 is a multiplication (M.) fact.

Finish the M. facts for Ex. 1 to 9. For Ex. 1 write, "4 cones have 8 scoops, so four 2's = 8."

- | | | |
|-------------|--------------|--------------|
| 1. four 2's | 4. seven 2's | 7. three 2's |
| 2. six 2's | 5. five 2's | 8. nine 2's |
| 3. two 2's | 6. eight 2's | 9. one 2 |

Boxes A, B, and C show three ways to write **multiplication facts**. We read them all like this:

"four 2's are 8."

The sign we use to show multiplication is **x**. It means to **multiply**, just as **+** means to add and **-** means to subtract.

Copy Ex. 1 to 9. Write each example and its product all three ways, as in boxes A, B, and C.

[O]

Having multiplication facts in a table may help you to learn them. Can you cover the answers and say the nine multiplication facts for 2's?



Multiplication Facts for 2's

| | | | | | | | | |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| $\times 1$ | $\times 2$ | $\times 3$ | $\times 4$ | $\times 5$ | $\times 6$ | $\times 7$ | $\times 8$ | $\times 9$ |
| 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 |



Drawing Two Equal Groups

M. facts for 2 [W]

1. How many flowers did Jean draw? Show the work in four ways as in Ex. a, b, c, and d.

- a. 4 b. 4 c. two 4's = ?

$$\begin{array}{r} +4 \\ ? \end{array}$$

$$\begin{array}{r} \times 2 \\ ? \end{array}$$
 d. $2 \times 4 = ?$

How many flowers did the others draw in their books? Write the work four ways, as in a to d of Ex. 1.

2. Sam 4. Ned 6. Mike
 3. Betsy 5. Ann 7. Sally

Copy and write the products.

8. 2×5 11. 2×8 14. 2×9
 9. 2×7 12. 2×3 15. 2×6
 10. 2×4 13. 2×2 16. 2×1

You may want to use this table to help you learn the multiplication facts for 2.

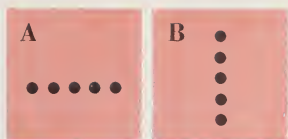
Multiplication Facts for 2

| | | | | | | | | |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| $\times 2$ | $\times 2$ | $\times 2$ | $\times 2$ | $\times 2$ | $\times 2$ | $\times 2$ | $\times 2$ | $\times 2$ |
| <u>2</u> | <u>4</u> | <u>6</u> | <u>8</u> | <u>10</u> | <u>12</u> | <u>14</u> | <u>16</u> | <u>18</u> |

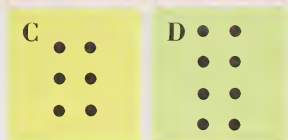
Pairs of Multiplication Facts

M. facts for 2's and for 2 [O]

1. Which box (A or B) shows a column? Which shows a row? How many dots has the column? How many has the row?



2. Look at the two columns in box C. Do you see two 3's? Are there 6 dots in all? $2 \times 3 = 6$



3. Now look at the rows in the same box. There are three 2's, so $3 \times 2 = 6$. Do 2×3 and 3×2 have the same product? Do they go together as a pair?

4. How many columns in box D? Two $_ \times _ = ?$ How many rows in box D? Four $_ \times _ = ?$

$2 \times 4 = 8$ and $4 \times 2 = 8$ are a pair of M. facts.

5. No fact makes a pair with $2 \times 2 = 4$. Why?

Multiplication facts almost always go in pairs.

[W]

Work each example and write the fact that goes with it. For Ex. 6, write " $5 \times 2 = 10$ and $2 \times 5 = 10$."

- | | | | |
|-----------------|------------------|------------------|--------------|
| 6. 5×2 | 10. 6×2 | 14. 2×7 | 18. two 6's |
| 7. 2×3 | 11. 4×2 | 15. 9×2 | 19. five 2's |
| 8. 1×2 | 12. 2×9 | 16. 7×2 | 20. two 8's |
| 9. 3×2 | 13. 8×2 | 17. 2×4 | 21. two 1's |

Copy the examples in which you can multiply.

- | | | |
|-------------|-----------------|--------------------|
| 22. $5 + 5$ | 24. $2 + 2 + 2$ | 26. $2¢ + 8¢ + 5¢$ |
| 23. $3 + 7$ | 25. $3 + 4 + 7$ | 27. $4¢ + 4¢ + 4¢$ |

Extra Practice. Work Extra Practice Set 52.



The Easter Egg Hunt

Using M. facts for 2's and for 2 [W]

We multiply to find how many in all if the groups we put together are equal.

Write the multiplication work for these problems. The work in the box is for problem 1.

$$\begin{array}{r} 2 \text{ eggs} \\ \times 4 \\ \hline 8 \text{ eggs} \end{array}$$

1. The Easter eggs ready for the egg hunt were in groups of 2. How many would be in 4 groups?

2. Ned took 6 minutes to find one group of eggs. If it took him just as long to find another group, how many minutes was that for the 2 groups?

3. Five children each found 2 eggs. How many eggs did they find in all?

4. Sue found 8 eggs. Lois found two times as many. How many eggs did Lois find?

5. Bill found only 2 eggs. If Joe found six times as many, how many eggs did Joe find?

[O]

Tell why you can multiply in each problem.

Oral Practice on Multiplication Facts

| a | b | c |
|-----------------------|-------------------|-------------------|
| 1. $? \times 3 = 6$ | $5 \times ? = 10$ | $2 \times ? = 14$ |
| 2. $2 \times ? = 4$ | $? \times 2 = 18$ | $? \times 2 = 8$ |
| 3. $2 \times ? = 6$ | $2 \times ? = 8$ | $? \times 2 = 12$ |
| 4. $? \times 6 = 12$ | $? \times 2 = 4$ | $9 \times ? = 18$ |
| 5. $4 \times ? = 8$ | $8 \times ? = 16$ | $? \times 5 = 10$ |
| 6. $? \times 7 = 14$ | $6 \times ? = 12$ | $2 \times ? = 2$ |
| 7. $? \times 2 = 6$ | $? \times 2 = 14$ | $3 \times ? = 6$ |
| 8. $2 \times ? = 16$ | $? \times 2 = 2$ | $? \times 9 = 18$ |
| 9. $? \times 2 = 16$ | $? \times 2 = 10$ | $? \times 1 = 2$ |
| 10. $2 \times ? = 10$ | $? \times 8 = 16$ | $2 \times ? = 12$ |
| 11. $? \times 4 = 8$ | $7 \times ? = 14$ | $2 \times ? = 18$ |

In the first two rows, turn each fact around. For the first example, say, “ $2 \times 3 = 6$, so $6 = 2 \times 3$.”

To Keep in Practice

A. and S. [W]

Write answers on folded paper.

| a | b | c | d | e | f | g |
|-------------|-------------|------------|------------|-------------|-------------|--------------|
| 1. 498 | 278 | 97 | 60 | 438 | 352 | \$7.60 |
| <u>-479</u> | <u>+369</u> | <u>-92</u> | <u>+40</u> | <u>-406</u> | <u>-158</u> | <u>-3.59</u> |
| 2. 83 | 357 | 450 | 83 | 832 | 565 | \$3.21 |
| <u>-9</u> | <u>+506</u> | <u>-80</u> | <u>-47</u> | <u>-453</u> | <u>-348</u> | <u>+1.68</u> |
| 3. 22 | 44 | 10 | 31 | 15 | 27 | \$0.13 |
| 16 | 8 | 57 | 46 | 26 | 20 | 0.08 |
| 37 | 7 | 4 | 8 | 9 | 33 | 0.48 |
| <u>+19</u> | <u>+26</u> | <u>+28</u> | <u>+9</u> | <u>+24</u> | <u>+8</u> | <u>+0.05</u> |

Check your work in the examples of row 3.

Making Change

Coins [O]

A



1. Mrs. Long gave 25¢ for a 13¢ bar of soap. Use the three coins in picture A to count her change. Say, “13¢,” the cost of the soap. Now point to one penny and say, “14.”

2. What should you say when you point to the other penny? Why do you then say, “25,” as you point to the dime?

B



3. Mrs. Ball bought stamps costing 18¢. Picture B shows her change from 25¢. Point to the coins and say what the clerk said as he made change.

4. Bill’s mother gave the clerk a half dollar for things that cost 23¢. The clerk said, “23¢” (the cost), and then “24, 25, 50.” Use picture C and count out the change.

C



5. Jean gave a clerk 50¢ for a 31¢ cake. He said, “31¢,” and counted pennies until he said, “35.” What coin did he count next when he said, “40”? when he said, “50”?

6. Jack bought a 35¢ cowboy rope. Count out his change from 50¢.

7. Picture D shows Clara's change after she bought a 35¢ book. How much did she have at first?

D



8. Mrs. Ball paid 7¢ for cabbage. She gave the clerk a dollar bill. Why was her change wrong (picture E)?

E



9. If you spend 12¢, what coins will you get in change from a quarter? from a half dollar?

Tell how to make change with the fewest coins:

You give 25¢ and the amount to pay is

10. 16¢. 11. 9¢. 12. 21¢. 13. 15¢. 14. 14¢.

You give 50¢ and the amount to pay is

15. 28¢. 16. 39¢. 17. 12¢. 18. 47¢. 19. 26¢.

You give \$1.00 and the amount to pay is

20. 65¢. 21. 27¢. 22. \$0.30. 23. \$0.19.

(two hundred thirty-three) 233

Adding and Subtracting Money Numbers

[W]

1 to 6. To each number below, add \$2.89.

\$5.80 \$4.09 \$3.90 \$6.08 \$5.70 \$4.07

7 to 12. From each number above, subtract \$2.49.

13 to 18. From the same numbers, subtract \$3.68.

Do You Know?

Progress Test 22 [W]

For rows 1 and 2 write answers on folded paper.

| | a | b | c | d | e | f | g | h | i |
|----|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| 1. | 4 | 2 | 7 | 5 | 2 | 2 | 3 | 2 | 9 |
| | $\times 2$ | $\times 3$ | $\times 2$ | $\times 2$ | $\times 1$ | $\times 7$ | $\times 2$ | $\times 6$ | $\times 2$ |
| 2. | 2 | 8 | 6 | 2 | 1 | 2 | 7 | 2 | 2 |
| | $\times 2$ | $\times 2$ | $\times 2$ | $\times 5$ | $\times 2$ | $\times 9$ | $\times 2$ | $\times 8$ | $\times 4$ |

Write answers on your paper for Ex. 3 to 9.

3. What are multiplication answers called?

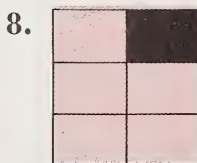
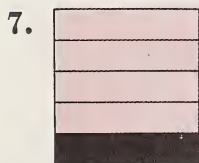
4. Write in two other ways. two 6's are 12.

5. Subtract 347 from a. 406; b. 827.

6. Copy the two examples in which you can get the answer by multiplying.

a. $4 + 2 + 2$ b. $4 + 4$ c. $2 + 2 + 2$ d. $3 + 1 + 5$

Write the fraction to tell what part is black in each of these squares:



Adding Longer and Wider Columns

5 addends [O]

Sometimes we add long columns with five or more numbers. Each number may have three places or more.

There is nothing new in the additions on this page, except that you add longer or wider columns.

Ex. A. *Think*, “17, 23, 28, 37.” Write, “37.”

Ex. B to E. Explain the work. How many places do cents take in boxes D and E?

| | | | | |
|--|---|--|---|---|
| A $\begin{array}{r} 8 \\ 9 \\ 6 \\ 5 \\ +9 \\ \hline 37 \end{array}$ | B $\begin{array}{r} 56 \\ 4 \\ 8 \\ 7 \\ +8 \\ \hline 83 \end{array}$ | C $\begin{array}{r} 67¢ \\ 19¢ \\ 8¢ \\ 26¢ \\ +5¢ \\ \hline 125¢, \\ \text{or } \$1.25 \end{array}$ | D $\begin{array}{r} \$3.49 \\ 2.56 \\ +1.08 \\ \hline \$7.13 \end{array}$ | E $\begin{array}{r} \$4.27 \\ 0.89 \\ 0.73 \\ +2.44 \\ \hline \$8.33 \end{array}$ |
|--|---|--|---|---|

[W]

Copy in columns and add, as in the boxes above.

- | | | |
|-----------------------|----------------------------|-------------------|
| 1. 7, 8, 6, 5, 9 | 4. 41, 8, 5, 7, 9 | 7. 38, 4, 9, 4, 9 |
| 2. 3, 8, 7, 9, 6 | 5. 62, 8, 0, 7, 5 | 8. 8, 7, 4, 6, 8 |
| 3. 4, 6, 9, 9, 8 | 6. 26, 5, 2, 7, 8 | 9. 9, 7, 7, 9, 8 |
| 10. 329, 184, 249 | 16. 16¢, 5¢, 87¢, 7¢, 18¢ | |
| 11. 193, 245, 413 | 17. \$4.07, \$3.09, \$0.83 | |
| 12. 248, 256, 67, 396 | 18. \$0.79, \$4.12, \$3.12 | |
| 13. 215, 457, 76, 93 | 19. \$1.56, \$5.84, \$0.03 | |
| 14. 452, 24, 300, 126 | 20. \$2.24, \$3.05, \$0.42 | |
| 15. 400, 6, 252, 105 | 21. \$0.40, \$0.04, \$1.00 | |

► **Extra Practice.** Work Sets 57 and 58.



Three Quarts of Milk to Each House!

M. facts for 3's [O]

Today each house on Elm Street is to get 3 quarts of milk. Mr. Brown has just left the milk at 4 houses. How many quarts in all has he left at these houses?

$$\begin{array}{r} 3 \\ 3 \\ 3 \\ +3 \\ \hline ? \end{array}$$

1. Count the quarts by 3's. 3, 6, -?-, -?-
2. Find the number of quarts by adding 3's, as in the box. You must add -?- 3's. Is the sum 12?

Count by 3's to find the quarts needed for

3. 5 houses. (3, 6, 9, -?-, -?-)
4. 7 houses.
5. 3 houses.
6. 8 houses.
7. 2 houses.
8. 9 houses.
9. 6 houses.

For Ex. 1 above you can give the total by writing a multiplication (M.) fact as in A or in B or in C at the right.

| | |
|-------------------------------|-----------------------------------|
| A Four 3's = 12 | C 3 $\times 4$ 12 |
| B $4 \times 3 = 12$ | |

For Ex. 3 to 9 on page 236, write multiplication facts. Write each fact the three ways.

Now check your products for Ex. 3 to 9 by adding 3's. Number your addition examples 3 to 9, too.

Check these products by counting 3's or by adding 3's. Then write the correct multiplication facts.

| | | | | | |
|---|--|---|--|---|---|
| 10. $\begin{array}{r} 3 \\ \times 6 \\ \hline 18 \end{array}$ | 11. $\begin{array}{r} 3 \\ \times 4 \\ \hline 9 \end{array}$ | 12. $\begin{array}{r} 3 \\ \times 7 \\ \hline 21 \end{array}$ | 13. $\begin{array}{r} 3 \\ \times 2 \\ \hline 6 \end{array}$ | 14. $\begin{array}{r} 3 \\ \times 8 \\ \hline 27 \end{array}$ | 15. $\begin{array}{r} 3 \\ \times 4 \\ \hline 12 \end{array}$ |
|---|--|---|--|---|---|

| | | | | | |
|--|---|---|---|---|---|
| 16. $\begin{array}{r} 3 \\ \times 3 \\ \hline 9 \end{array}$ | 17. $\begin{array}{r} 3 \\ \times 5 \\ \hline 10 \end{array}$ | 18. $\begin{array}{r} 3 \\ \times 9 \\ \hline 18 \end{array}$ | 19. $\begin{array}{r} 3 \\ \times 4 \\ \hline 14 \end{array}$ | 20. $\begin{array}{r} 3 \\ \times 6 \\ \hline 21 \end{array}$ | 21. $\begin{array}{r} 3 \\ \times 7 \\ \hline 24 \end{array}$ |
|--|---|---|---|---|---|

Write the multiplication number stories (facts) for Ex. 22 to 26, as in the box.

22. Five 3¢ candies cost how much?

23. Eight 3¢ candies cost how much?

24. If John saves 3¢ each day, in 6 days he will save how much?

25. If May gives her brother 3¢ each week, in 4 weeks she will give him how much?

26. Nine 3¢ stamps cost how much?

27. Copy and finish these multiplication facts for 3's:

| | | | | | | | | |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| a | b | c | d | e | f | g | h | i |
| 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| $\times 1$ | $\times 2$ | $\times 3$ | $\times 4$ | $\times 5$ | $\times 6$ | $\times 7$ | $\times 8$ | $\times 9$ |

| |
|---|
| $\begin{array}{r} 3\text{¢} \\ \times 5 \\ \hline 15\text{¢} \end{array}$ |
|---|

Equal Groups of Airplanes

M. facts for 3 [O]

Picture A. In the sky, Joe saw 3 groups of 4 planes each, or how many planes in all?



1. For picture A, you can add to find the answer:

$$4 + 4 + 4 = ? \quad \text{Say the sum.}$$

2. Ask the question for picture A as a multiplication example.

3. Say the product (answer).

Picture B shows the planes Joe saw on the ground. Use columns to find how many three 6's are.

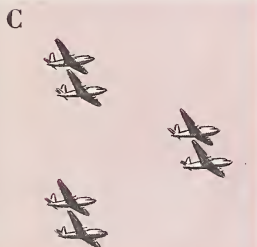


4. For picture B, say the addition example and the sum.

5. Instead of adding as in Ex. 4, you can multiply. Why?

6. On the board, write the M. fact for picture B three ways.

7. For picture C, say the addition example and its sum. Say the multiplication example and its product.



[W]

Copy and add. Then write the multiplication facts 3 ways.

8. $3 + 3 + 3$

12. $7 + 7 + 7$

9. $5 + 5 + 5$

13. $9 + 9 + 9$

10. $8 + 8 + 8$

14. $4 + 4 + 4$

11. $2 + 2 + 2$

15. $6 + 6 + 6$

Pairs of Multiplication Facts

Facts for 3's and for 3 [O]

1. Sue helped Nan learn the M. facts. She said, "In picture A, the rows of birds show $5 \times 3 = 15$. The columns of birds show $3 \times 5 = 15$." Why?

2. "But in picture B," said Sue, " $3 \times 3 = 9$ both by rows and by columns." Does $3 \times 3 = 9$ have another multiplication fact?

Nan remembered that almost always multiplication facts go in pairs. If you know one fact, you should know the other.

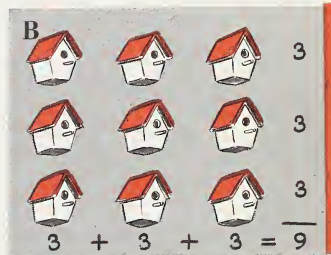
3 to 5. On the board, write the pairs of M. facts for C to E.

6. Now draw dot pictures for 3×4 2×3 3×8

7. Under each of the pictures for Ex. 6, write its pair of facts.

[W]

Copy, and write the products. Beside each multiplication fact, write the other that goes with it.



| | | | | | |
|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| 8. 3 | 9. 3 | 10. 7 | 11. 3 | 12. 3 | 13. 4 |
| <u>$\times 9$</u> | <u>$\times 6$</u> | <u>$\times 3$</u> | <u>$\times 5$</u> | <u>$\times 8$</u> | <u>$\times 3$</u> |

| | | | | | |
|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| 14. 8 | 15. 3 | 16. 9 | 17. 3 | 18. 5 | 19. 6 |
| <u>$\times 3$</u> | <u>$\times 4$</u> | <u>$\times 3$</u> | <u>$\times 7$</u> | <u>$\times 3$</u> | <u>$\times 3$</u> |

Multiplication Facts for 3's and for 3

[O]

You will use multiplication facts many times. You should know them well. Tell ways to use these tables to learn multiplication facts for 3's and for 3.

Multiplication Facts for 3's

| | | | | | | | | |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| $\times 1$ | $\times 2$ | $\times 3$ | $\times 4$ | $\times 5$ | $\times 6$ | $\times 7$ | $\times 8$ | $\times 9$ |
| 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 |

Multiplication Facts for 3

| | | | | | | | | |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| $\times 3$ | $\times 3$ | $\times 3$ | $\times 3$ | $\times 3$ | $\times 3$ | $\times 3$ | $\times 3$ | $\times 3$ |
| 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 |

Say the products by rows and by columns.

| | a | b | c | d | e | f | g | h | i |
|----|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| 1. | 3 | 9 | 3 | 2 | 8 | 7 | 5 | 3 | 3 |
| | $\times 5$ | $\times 2$ | $\times 4$ | $\times 6$ | $\times 3$ | $\times 2$ | $\times 3$ | $\times 2$ | $\times 9$ |
| 2. | 2 | 4 | 3 | 9 | 6 | 3 | 2 | 3 | 5 |
| | $\times 5$ | $\times 2$ | $\times 6$ | $\times 3$ | $\times 2$ | $\times 3$ | $\times 9$ | $\times 7$ | $\times 2$ |
| 3. | 2 | 4 | 8 | 2 | 6 | 2 | 3 | 2 | 7 |
| | $\times 8$ | $\times 3$ | $\times 2$ | $\times 4$ | $\times 3$ | $\times 7$ | $\times 8$ | $\times 3$ | $\times 3$ |

► **Extra Practice.** Work Extra Practice Set 54.



The Circus Parade

Using M. facts for 3's and for 3 [W]

Use multiplication facts for these problems:

1. Three clowns each carried 7 balloons. How many balloons did the 3 clowns carry?
2. There were 7 clowns, each wearing 3 hats. How many hats altogether did these clowns wear?
3. There were 6 horses with 3 midgets on each horse. How many midgets were there in all?
4. There were 5 camels with 3 clowns on each camel. How many clowns were on camels?
5. The elephants walked in 3 rows, 4 in a row. How many elephants were in the parade?
6. Nine clowns each carried 3 small flags. How many flags did they carry in all?
7. The monkeys were in 3 cages, 6 in a cage. How many monkeys were there?



Multiplying 1

[O]

1. Mrs. Cat takes her kittens from their box one at a time. In 4 trips, how many kittens are taken?

How many are **four 1's**? $4 \times 1 = ?$

2. In 6 trips, how many kittens can Mrs. Cat take?

How many are **six 1's**? $6 \times 1 = ?$

3. In two trips she can take _?_. $2 \times 1 = ?$

4. In 5 trips she can take _?_. $5 \times 1 = ?$

1 multiplied by any number is that number.

Tell the products in Ex. 5 to 10.

| | | | | | |
|------------|------------|------------|------------|------------|------------|
| 5. 1 | 6. 1 | 7. 1 | 8. 1 | 9. 1 | 10. 1 |
| $\times 2$ | $\times 8$ | $\times 1$ | $\times 7$ | $\times 3$ | $\times 9$ |

To Keep in Practice

[W]

Copy and work.

- | | | |
|----------------|-----------------|-----------------|
| 1. $752 - 469$ | 6. $823 - 267$ | 11. $257 + 584$ |
| 2. $879 - 384$ | 7. $98 + 687$ | 12. $806 - 528$ |
| 3. $527 + 89$ | 8. $753 - 649$ | 13. $827 - 719$ |
| 4. $356 - 297$ | 9. $561 - 278$ | 14. $633 - 438$ |
| 5. $930 - 68$ | 10. $649 - 559$ | 15. $365 + 434$ |

16. $38 + 16 + 8 + 18 + 5$

17. $14¢ + 25¢ + 16¢ + 27¢ + 46¢$

242 (two hundred forty-two)

Do You Know?

Progress Test 23 [W]

1 to 3. Turn to page 240. First cover the two tables at the top of the page. Then on folded paper write the products for rows 1 to 3.

Copy, find the answers, and check your work.

- | | | | | |
|------------|------------|------------|------------|------------|
| 4. 600 | 5. 820 | 6. 714 | 7. 347 | 8. 800 |
| <u>-70</u> | <u>-79</u> | <u>-65</u> | <u>+68</u> | <u>-63</u> |

Copy the example in the box that has for its answer

| | | |
|------------|------|------|
| 7 | 7 | 7 |
| $\times 3$ | -3 | $+3$ |

9. a sum. 10. a product.

Write the letter of the circle in which

11. $\frac{1}{8}$ is black.

12. $\frac{1}{5}$ is black.

13. $\frac{1}{8}$ is black.

A



B



C



14. Copy the two columns below and draw lines between things that mean the same.

7 days

1 yard

16 ounces

1 day

3 feet

1 dozen

24 hours

1 week

12 things

1 pound

15. Copy the two examples that mean the same.

a. $5 + 2$

b. five 2's

c. $5 - 2$

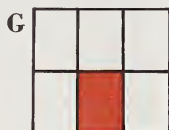
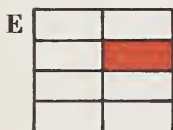
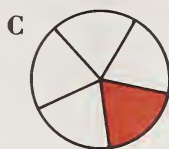
d. 5×2

16. Draw a line which is 6 of your finger inches long.

(two hundred forty-three) **243**

Parts of a Whole

Meaning of number below the line [O]



Name the picture in which the colored part is

1. $\frac{1}{4}$ of the whole.
2. $\frac{1}{6}$ of the whole.
3. $\frac{1}{3}$ of the whole.
4. $\frac{1}{5}$ of the whole.
5. $\frac{1}{8}$ of the whole.

6. Picture A has -?- parts. Are the parts equal? Is the yellow part $\frac{1}{3}$ of the whole? Explain.

7. Does the yellow part of picture F show $\frac{1}{5}$? Explain.

8. Does the blue part of picture H show $\frac{1}{6}$? Explain.

9. The **2** in the fraction $\frac{1}{2}$ tells that there are **2 equal parts** in the whole. What does the 8 in $\frac{1}{8}$ tell? the 6 in $\frac{1}{6}$? the 3 in $\frac{1}{3}$?

What number must be written under the line in a fraction to show that a whole thing

10. has been divided into 7 equal parts?
11. has been divided into 10 equal parts?

The number under the line in a fraction tells how many equal parts in the whole.

12. The two cakes are in halves. Is $\frac{1}{2}$ of the cupcake as large as $\frac{1}{2}$ of the fruit cake? Explain.

13. Is $\frac{1}{6}$ of a quart of cherry juice the same as $\frac{1}{6}$ of a gallon of cherry juice? See the picture.

14. If the red part of each flag is $\frac{1}{5}$ of the whole flag, why are the red parts not equal in the picture?

15. Is $\frac{1}{4}$ of a cherry as big as $\frac{1}{4}$ of an apple?

16. Is $\frac{1}{10}$ of a yard as long as $\frac{1}{10}$ of a mile?

17. Are the halves of all apples the same size?



**Some halves are large, others are small.
Some thirds are large, others are small, and
so on.**

**Halves of the same whole are equal. Thirds
of the same whole are equal, and so on.**

18. On the board, draw $\frac{1}{2}$ of a large circle and $\frac{1}{2}$ of a small circle. Are the halves equal? Why?

19. Draw two equal squares on the board. Divide one square into four equal parts and the other into four parts not equal. Which square is divided into fourths?

20. Now draw two lines, one much longer than the other. Divide each line into thirds. Are all thirds equal?



Multiplying Tens

M. of 2-place numbers [O]

Each card has 10 lollipops. To find how many on 3 cards you must learn to find what 3×10 equal.

We read 3×10 as "3 times 10." We say "**times**" for the sign \times .

1. Count the lollipops by 10's. Then add 10's (box A).

| A | B |
|-----------------|-----------------|
| 10 | 10 |
| 10 | $\times 3$ |
| $\frac{+10}{?}$ | $\frac{30}{30}$ |

2. You do not need to add these equal numbers (10's). You can multiply (box B). For 3×10 *think*,

3×1 ten = 3 tens, or 30 .

3. In 30, why is 3 in ten's place and 0 in one's place?

Saying "times" for \times , read the examples in row 4.

| | a | b | c | d | e | f | g | h |
|----|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 4. | 30 | 20 | 40 | 20 | 10 | 20 | 10 | 30 |
| | $\frac{\times 3}{90}$ | $\frac{\times 2}{40}$ | $\frac{\times 2}{80}$ | $\frac{\times 3}{60}$ | $\frac{\times 2}{20}$ | $\frac{\times 4}{80}$ | $\frac{\times 3}{30}$ | $\frac{\times 2}{60}$ |

5. How are the products in row 4 found? In these products, why is 0 in one's place?

You multiply tens like ones.

Write the work for Ex. 6 to 13. Ex. 6 should be written this way \longrightarrow

| |
|------------|
| 20 |
| $\times 2$ |
| 40 |

6. 2×20

9. 4×20

7. two 10's

10. three 10's

12. 2×40

8. three 20's

11. 2×30

13. two 20's

Check your answers for Ex. 6 to 13 by drawing ϕ -pictures. This is a ϕ -picture for Ex. 6: $\phi\phi \quad \phi\phi$.

14. Find out what is wrong with the products in boxes C and D. Then write the examples with the correct products.

| C | D |
|---|--|
| $\begin{array}{r} 20 \\ \times 4 \\ \hline 8 \end{array}$ | $\begin{array}{r} 30 \\ \times 3 \\ \hline 33 \end{array}$ |

To Keep in Practice

Copy in columns and work.

1. $32 + 69 + 25 + 78$

5. $239 + 375 + 78 + 165$

2. $45 + 8 + 7 + 9 + 8$

6. $\$0.74 + \$3.87 + \$4.62$

3. $61 + 9 + 48 + 37 + 6$

7. $\$2.00 + \$3.07 + \$0.72$

4. $23 + 7 + 8 + 6 + 5$

8. $\$4.09 + \$0.74 + \$3.83$

9. From 5 dollars and 10 cents take 3 dollars and 93 cents.

10. 9 dollars less 4 dollars and 64 cents is _?_.

11.
$$\begin{array}{r} 362 \\ -94 \\ \hline \end{array}$$

12.
$$\begin{array}{r} 506 \\ -33 \\ \hline \end{array}$$

13.
$$\begin{array}{r} 427 \\ -169 \\ \hline \end{array}$$

14.
$$\begin{array}{r} 705 \\ -68 \\ \hline \end{array}$$

15.
$$\begin{array}{r} 602 \\ -18 \\ \hline \end{array}$$



Making Necklaces

Multiplying two-place numbers; no carrying [O]

Each necklace in the picture has 32 beads. Why is this a multiplication picture?

To find the total, we can add as in box A, but it is better to multiply. 32 is $30 + 2$. We can multiply a long way as in boxes B to D. In B we find three 2's, in C we find three 30's, and in D we add the products.

| |
|---|
| A |
| $\begin{array}{r} 32 \\ 32 \\ + 32 \\ \hline ? \end{array}$ |

| | | |
|--|--|---|
| B | C | D |
| $\begin{array}{r} 2 \\ \times 3 \\ \hline 6 \end{array}$ | $\begin{array}{r} 30 \\ \times 3 \\ \hline 90 \end{array}$ | $\begin{array}{r} 6 \\ + 90 \\ \hline 96 \end{array}$ |

| E | | | | | | | | |
|---|------|------|---|---|----------|---|---|---|
| <table border="1"> <tr> <th>Tens</th> <th>Ones</th> </tr> <tr> <td>3</td> <td>2</td> </tr> <tr> <td>\times</td> <td>3</td> </tr> <tr> <td>9</td> <td>6</td> </tr> </table> | Tens | Ones | 3 | 2 | \times | 3 | 9 | 6 |
| Tens | Ones | | | | | | | |
| 3 | 2 | | | | | | | |
| \times | 3 | | | | | | | |
| 9 | 6 | | | | | | | |

Box E shows the short way to find 3×32 .

First, multiply the ones, 3×2 . Write the product, 6, in one's place in the answer. Why?

Then, multiply the tens, 3×3 , and write the product, 9, in ten's place in the answer. Why?

The product of 3 times 32 is 96.

Explain Ex. 1 to 5 as shown in boxes B to D. For Ex. 1, say, " $3 \times 3 = 9$, $3 \times 20 = 60$, $9 + 60 = 69$."

1. $\begin{array}{r} 23 \\ \times 3 \\ \hline \end{array}$

2. $\begin{array}{r} 21 \\ \times 2 \\ \hline \end{array}$

3. $\begin{array}{r} 42 \\ \times 2 \\ \hline \end{array}$

4. $\begin{array}{r} 22 \\ \times 4 \\ \hline \end{array}$

5. $\begin{array}{r} 43 \\ \times 2 \\ \hline \end{array}$

$\begin{array}{r} 69 \\ \times 3 \\ \hline \end{array}$

$\begin{array}{r} 42 \\ \times 2 \\ \hline \end{array}$

$\begin{array}{r} 84 \\ \times 2 \\ \hline \end{array}$

$\begin{array}{r} 88 \\ \times 4 \\ \hline \end{array}$

$\begin{array}{r} 86 \\ \times 2 \\ \hline \end{array}$

Now say Ex. 1 to 5 on page 248 the short way.

For Ex. 1, say

$$3 \times 3 = 9. \text{ Write "9."}$$

$$3 \times 2 = 6. \text{ Write "6."}$$

The product is 69.

6. Joanne and Mary made two longer necklaces, using 72 beads in each, or how many beads for both necklaces? $2 \times 72 = ?$



| | |
|---|------------|
| F | 72 |
| | $\times 2$ |
| | 144 |

Explain the work in box F.

What is new in this example?

Which of the products in Ex. 7 to 11 are wrong? Tell why.

| | | | | |
|------------|------------|------------|------------|-----------------|
| 7. 92 | 8. 83 | 9. 32 | 10. 71 | 11. 64¢ |
| $\times 3$ | $\times 2$ | $\times 4$ | $\times 3$ | $\times 2$ |
| 276 | 85 | 128 | 214 | 128¢, or \$1.28 |

[W]

Copy, and multiply. Check by adding.

| | a | b | c | d | e | f | g | h |
|-----|------------|------------|------------|------------|------------|------------|------------|------------|
| 12. | 43 | 63 | 24 | 92 | 82 | 43 | 44 | 51¢ |
| | $\times 2$ | $\times 3$ | $\times 2$ | $\times 3$ | $\times 2$ | $\times 3$ | $\times 2$ | $\times 3$ |
| 13. | 83 | 42 | 23 | 91 | 72 | 82 | 22 | 62¢ |
| | $\times 2$ | $\times 2$ | $\times 3$ | $\times 2$ | $\times 3$ | $\times 3$ | $\times 4$ | $\times 2$ |
| 14. | 42 | 73 | 52 | 83 | 61 | 53 | 93 | 32¢ |
| | $\times 3$ | $\times 2$ | $\times 2$ | $\times 3$ | $\times 2$ | $\times 3$ | $\times 2$ | $\times 4$ |

► **Extra Practice.** Work Sets 59 and 60.

When Do You Multiply?

Differentiating A. and M. [O]

To find a total (how many in all) you may add, but to find the total of equal groups or numbers, you multiply.

Do you add or multiply in Ex. 1 to 3? Tell why.

1. How many spoons must Jean have to put 2 spoons at each of 4 places at her party table?
2. Sally is 10 years old. Her mother is 3 times as old. How old is Sally's mother?
3. At the picnic 3 boys and 5 girls need forks. How many forks are needed?

[W]

Add or multiply in Ex. 4 to 9. Use the pictures to help you.



4. How many shoes in all do 5 boys need?

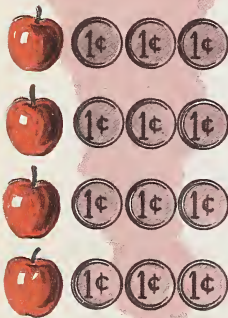
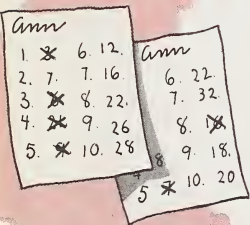
5. Ann missed 4 examples Monday and 2 examples on Tuesday. In all, she missed _?_ examples.

6. At 3¢ each, 4 apples cost _?_.

7. Sam saved 6¢ one day and 9¢ the next. How much did he save in all in the two days?

8. Joe bought a 10¢ toy and an 8¢ toy. How much in all did Joe spend for the toys he bought?

9. Three 7¢ toys cost how much?



Do You Make Mistakes?

Diagnostic Test 6

Write answers on folded paper.

| | a | b | c | d | Study Pages | Practice Sets |
|----|--|---|---|--|-------------|---------------|
| 1. | $\begin{array}{r} 9 \\ \times 2 \\ \hline \end{array}$ | $\begin{array}{r} 2 \\ \times 7 \\ \hline \end{array}$ | $\begin{array}{r} 6 \\ \times 2 \\ \hline \end{array}$ | $\begin{array}{r} 2 \\ \times 8 \\ \hline \end{array}$ | 224-229 | 52 |
| 2. | $\begin{array}{r} 3 \\ \times 6 \\ \hline \end{array}$ | $\begin{array}{r} 5 \\ \times 3 \\ \hline \end{array}$ | $\begin{array}{r} 3 \\ \times 8 \\ \hline \end{array}$ | $\begin{array}{r} 7 \\ \times 3 \\ \hline \end{array}$ | 236-240 | 54 |
| 3. | $\begin{array}{r} 1 \\ \times 4 \\ \hline \end{array}$ | $\begin{array}{r} 1 \\ \times 3 \\ \hline \end{array}$ | $\begin{array}{r} 1 \\ \times 6 \\ \hline \end{array}$ | $\begin{array}{r} 1 \\ \times 9 \\ \hline \end{array}$ | 242 | |
| 4. | $\begin{array}{r} 346 \\ 27 \\ 428 \\ +96 \\ \hline \end{array}$ | $\begin{array}{r} 9\text{¢} \\ 7\text{¢} \\ 5\text{¢} \\ 6\text{¢} \\ +8\text{¢} \\ \hline \end{array}$ | $\begin{array}{r} 27 \\ 453 \\ 49 \\ +40 \\ \hline \end{array}$ | $\begin{array}{r} \$2.47 \\ 3.64 \\ +2.18 \\ \hline \end{array}$ | 235 | 57, 58 |
| 5. | $\begin{array}{r} 42 \\ \times 3 \\ \hline \end{array}$ | $\begin{array}{r} 43 \\ \times 2 \\ \hline \end{array}$ | $\begin{array}{r} 61 \\ \times 3 \\ \hline \end{array}$ | $\begin{array}{r} 32\text{¢} \\ \times 4 \\ \hline \end{array}$ | 248-249 | 59, 60 |

Say These Answers Quickly

Practice in A. and S. [O]

1. $24 + 4$

5. $48 + 8$

9. $27 - 3$

2. 33 plus 7

6. $72 + 9$

10. 86 minus 6

3. $6 + 42$

7. $8 + 27$

11. $42 - 8$

4. 93 plus 6

8. $36 + 6$

12. 94 minus 7

(two hundred fifty-one) **251**



Can You Solve Problems?

Problem Test 6

Write your work and check it.

1. Bill rode his bicycle 158 miles in June, 206 miles in July, and then 270 miles in August. How far did he ride in the 3 months?

2. How many more miles did Bill ride his bicycle in August than in June? (Use numbers in Ex. 1.)

3. How much less than 300 miles did he ride in July? (July, 206 miles)

4. Bill has saved \$1.95 to buy a \$2.70 basket for his bicycle. How much more must he save?

5. Bill bought 2 bells for his bicycle. At 73¢ each, how much did they cost?

6. Bill must ride 12 miles to go to his uncle's and home again. In one month he made the trip 3 times. How many miles did he ride in all?

7. In school months, Bill rides a bicycle about 3 hours a week. In 4 weeks, how many hours would he ride?

8. It takes Bill 10 minutes to go to Sam's, 12 minutes from there to Bob's, and 8 minutes from Bob's to Tom's. How many minutes does Bill use from his house to Tom's?

In these problems, did you know when you should multiply? If not, study pages 221 to 225.

Do You Understand?

Test of Information and Meaning 6

On your paper, write "Yes" or "No" for each question.

1. Could you multiply to find the total in the example,
 $6 + 4 + 9 + 11$?
2. Is $\frac{1}{2}$ of an apple the same size as $\frac{1}{2}$ of a berry?
3. Does 5×3 mean $5 + 5 + 5$?
4. Does n stand for 9 in $28 = 37 - n$?
5. In finding $386 - 297$, do you borrow twice?
6. Are multiplication answers called sums?
7. To get $\frac{1}{5}$ of a line, would you divide the line into 5 equal parts?
8. Does "three 7's" mean the same as 3×7 ?
9. Are there 70 tens in the number 708?
10. Does \times mean "times" in the example 3×62 ?

How Well Can You Figure?

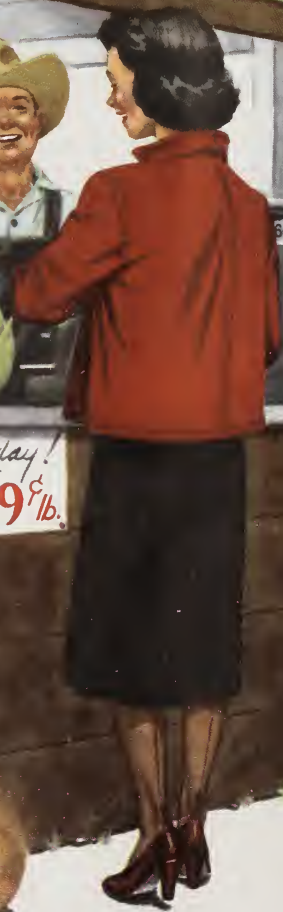
Computation Test 6

- | | | | | |
|--|-------------------------------------|--|---|---|
| 1. 83 <u>$\times 3$</u> | 2. 600 <u>-67</u> | 3. 72¢ <u>$\times 3$</u> | 4. \$5.10 <u>$-2.13$</u> | 5. \$8.99 <u>-2.35</u> |
| 6. 74 <u>$\times 2$</u> | 7. 942 <u>-887</u> | 8. 63 <u>$\times 3$</u> | 9. \$1.08 <u>$+6.70$</u> | 10. \$5.21 <u>-0.53</u> |
| 11. 22 <u>$\times 4$</u> | 12. 600 <u>-485</u> | 13. 89 <u>$+457$</u> | 14. \$5.86 <u>$-2.79$</u> | 15. \$0.75 <u>$+3.96$</u> |
| 16. $27 + 5 + 6 + 3 + 9$ | 17. $6¢ + 5¢ + 5¢ + 4¢ + 8¢$ | | | |
| 18. $426 + 38 + 19 + 15$ | 19. $\$5.06 + \$0.73 + \$1.46$ | | | |

Farm - Fresh
ITS • VEGETABLES

7

APPLE
JUICE 22¢
qt.



Special today!
CABBAGE 9¢/lb.

APPLES
43¢
BASKET



The Roadside Stand

Problems in A., S., M. [W]

Last October Billy helped his father at his roadside stand. These are some problems he had.

Write your work. Use the picture to help you.

1. Find out how much Mrs. Baker will have to pay for 2 baskets of apples.

2. How much would 4 quarts of apple juice cost Mrs. Baker?

3. Mrs. Baker paid 45¢ for grapes, 18¢ for beans, and 86¢ for butter. How much was her total for these things?

4. A head of cabbage weighed 4 pounds. How much did it sell for?

5. A man gave Billy a \$5.00 bill to pay for things that cost \$1.85. How much was the change?

6. Mrs. Brown gave a \$1 bill for fruit costing 79¢. What coins did Billy give her in change?

7. Billy worked these hours in one week in October: Monday, 3 hours; Tuesday, 2 hours; Wednesday, 4 hours; Thursday, 3 hours; Friday, 4 hours; Saturday, 4 hours. How many hours did Billy work that week?

8. The following week, Billy worked these hours: Monday, 4 hours; Tuesday, 2 hours; Wednesday, 3 hours; Thursday, 2 hours; Friday, 5 hours; Saturday, 5 hours. How many hours did Billy work that week?

9. Billy's father paid 32¢ an hour. How much did Billy earn in 4 hours?

Multiplication with Carrying

1-place number \times 2-place number [O]

1. It is 48 miles from Jack's house to the city. To find how far it is to the city and home again, Jack writes the example as in box A.

A

$$\begin{array}{r} 48 \\ \times 2 \\ \hline \end{array}$$

He *thinks*, "Multiply ones: $2 \times 8 = 16$. But where can I write the 16?"

Why can't Jack write "16" in one's place?

2. Then Jack begins again. $48 = 40 + 8$, or $8 + 40$. So he makes two multiplication examples, as in boxes B and C, and adds the products as in box D. Why?

3. Explain Jack's work in boxes B, C, and D.

| B | C | D |
|---|--|--|
| $\begin{array}{r} 8 \\ \times 2 \\ \hline 16 \end{array}$ | $\begin{array}{r} 40 \\ \times 2 \\ \hline 80 \end{array}$ | $\begin{array}{r} 16 \\ + 80 \\ \hline 96 \end{array}$ |

Instead of multiplying the long way as in boxes B, C, and D above, we can do the work a short way as shown in box E.

E

| | |
|----------|---|
| Tens | 8 |
| 4 | 8 |
| \times | 2 |
| 9 | 6 |

Multiply ones: $2 \times 8 = 16$. But $16 = 1$ ten and 6 ones. Just as you do when you are adding, write "6" in one's place in the product and **remember 1 ten** (carry it).

Multiply tens: $2 \times 4 = 8$. **Add the 1 ten you carried:** $8 + 1 = 9$. Write "9" in ten's place in the product. Why do you write it there?

The work at the top of page 257 will help you see why you multiply tens before you add the carried ten.

After you multiply the ten's figure, you add the 1 ten you carry. If you add it before you multiply, why would your answer be wrong (box F)?

F

$$\begin{array}{r} 48 \\ \times 2 \\ \hline 106 \end{array}$$

(wrong)

For Ex. 4 below, you work this way:

Ones: *Think*, " $2 \times 9 = 18$." 18 has a ten, so write "8" in one's column and carry 1 ten.

Tens: *Think*, " $2 \times 3 = 6$, and 1 ten carried are 7." Write "7" in ten's column.

In the same way, tell what to think in Ex. 5 to 8. Be sure to have two places for cents in money numbers.

| | | | | |
|---|---|--|--|---|
| 4. $\begin{array}{r} 39 \\ \times 2 \\ \hline 78 \end{array}$ | 5. $\begin{array}{r} 24 \\ \times 3 \\ \hline 72 \end{array}$ | 6. $\begin{array}{r} 58 \\ \times 2 \\ \hline 116 \end{array}$ | 7. $\begin{array}{r} 79¢ \\ \times 3 \\ \hline 237¢, \end{array}$ or \$2.37 | 8. $\begin{array}{r} \$0.23 \\ \times 8 \\ \hline \$1.84 \end{array}$ |
|---|---|--|--|---|

If the product of the ones is a two-place number, you carry one ten or more.

In which examples must you carry? Why?

| | a | b | c | d | e | f | g |
|----|---|---|---|---|---|--|---|
| 9. | $\begin{array}{r} 36 \\ \times 3 \\ \hline \end{array}$ | $\begin{array}{r} 32 \\ \times 6 \\ \hline \end{array}$ | $\begin{array}{r} 85 \\ \times 2 \\ \hline \end{array}$ | $\begin{array}{r} 23 \\ \times 3 \\ \hline \end{array}$ | $\begin{array}{r} 32 \\ \times 5 \\ \hline \end{array}$ | $\begin{array}{r} 23¢ \\ \times 2 \\ \hline \end{array}$ | $\begin{array}{r} \$0.12 \\ \times 9 \\ \hline \end{array}$ |

What are the missing figures?

| | | | | | | | |
|-----|--|--|---|---|---|--|--|
| 10. | $\begin{array}{r} 45 \\ \times 2 \\ \hline ?0 \end{array}$ | $\begin{array}{r} 15 \\ \times 3 \\ \hline ?5 \end{array}$ | $\begin{array}{r} 32 \\ \times 7 \\ \hline ?24 \end{array}$ | $\begin{array}{r} 78 \\ \times 2 \\ \hline 1?6 \end{array}$ | $\begin{array}{r} 23 \\ \times 5 \\ \hline 1?5 \end{array}$ | $\begin{array}{r} 19¢ \\ \times 2 \\ \hline ?8¢ \end{array}$ | $\begin{array}{r} \$0.23 \\ \times 6 \\ \hline \$1.?8 \end{array}$ |
|-----|--|--|---|---|---|--|--|

Which multiplications are wrong? Why?

| | | | | | | | |
|-----|---|--|---|---|---|--|--|
| 11. | $\begin{array}{r} 69 \\ \times 2 \\ \hline 128 \end{array}$ | $\begin{array}{r} 23 \\ \times 4 \\ \hline 82 \end{array}$ | $\begin{array}{r} 74 \\ \times 3 \\ \hline 222 \end{array}$ | $\begin{array}{r} 23 \\ \times 7 \\ \hline 161 \end{array}$ | $\begin{array}{r} 89 \\ \times 3 \\ \hline 247 \end{array}$ | $\begin{array}{r} 37¢ \\ \times 2 \\ \hline 64¢ \end{array}$ | $\begin{array}{r} \$0.32 \\ \times 8 \\ \hline \$2.56 \end{array}$ |
|-----|---|--|---|---|---|--|--|

Written Practice

M. with carrying [W]

Write answers on folded paper.

| a | b | c | d | e | f | g |
|--------------------|-----------------|-----------------|-----------------|-----------------|------------------|---------------------|
| 1. 18 <u>×3</u> | 15 <u>×2</u> | 32 <u>×7</u> | 23 <u>×5</u> | 96 <u>×3</u> | 32¢ <u>×4</u> | \$0.76 <u>×2</u> |
| 2. 87 <u>×3</u> | 23 <u>×9</u> | 63 <u>×2</u> | 23 <u>×6</u> | 94 <u>×2</u> | 33¢ <u>×9</u> | \$0.32 <u>×9</u> |
| 3. 46 <u>×3</u> | 85 <u>×2</u> | 12 <u>×5</u> | 23 <u>×4</u> | 28 <u>×2</u> | 75¢ <u>×3</u> | \$0.32 <u>×5</u> |
| 4. 39 <u>×3</u> | 23 <u>×7</u> | 68 <u>×3</u> | 32 <u>×8</u> | 21 <u>×3</u> | 32¢ <u>×6</u> | \$0.45 <u>×2</u> |
| 5. 23 <u>×8</u> | 38 <u>×3</u> | 23 <u>×2</u> | 33 <u>×7</u> | 24 <u>×3</u> | 92 <u>×2</u> | \$0.12 <u>×9</u> |

➤ **Extra Practice.** Work Sets 61 and 62.

To Keep in Practice

| | | | | | | A., S., M. [W] |
|----------------------|-------------------|-----------------|-------------------|-----------------|-------------------|---------------------|
| 1. 379 <u>+85</u> | 400 <u>-79</u> | 79 <u>×3</u> | 317 <u>-89</u> | 13 <u>×4</u> | 652 <u>-49</u> | \$0.68 <u>×2</u> |
| 2. 450 <u>-46</u> | 369 <u>+78</u> | 21 <u>×9</u> | 32 <u>×7</u> | 59 <u>×2</u> | 117 <u>-18</u> | \$0.86 <u>×3</u> |
| 3. 258 <u>+87</u> | 701 <u>-89</u> | 12 <u>×8</u> | 21 <u>×6</u> | 74 <u>×2</u> | 500 <u>-8</u> | 54¢ <u>×3</u> |

Pints, Quarts, and Gallons

Measuring liquids [O]

1. What do you call things like water, milk, and oil?

2. Sometimes we need to measure milk and gasoline and such things. When might we want to do this?

3. When we measure milk, we use **pints, quarts, and gallons**. The smallest measure in the picture is a $\frac{1}{2}$ pt. The largest is a gal.

4. The picture shows that it takes $\frac{1}{2}$ pt. half-pints to make a pint, $\frac{1}{2}$ pt. pints to make a qt., and 4 $\frac{1}{2}$ pt. to make a gal.

Tell which: half-pints, pints, quarts, or gallons.

5. Mr. Kane bought 10 qt. of gasoline and 4 gal. of oil.

6. At school Joe buys a qt. bottle of milk for lunch.

7. Farmer Brown sells his milk in gal. cans.

8. Usually it costs less to buy one large amount than to buy the same amount in smaller lots. It is cheaper to buy milk by the quart than by the pt.



2 pints = 1 quart (qt.)

4 quarts = 1 gallon (gal.)



Multiplying Hundreds

M. of 3-place numbers; no carrying [0]

1. Farmer Brown is loading $-?-$ 100-pound bags of feed on his truck. How many pounds of feed has he bought in all?

A

$$\begin{array}{r} 100 \\ 100 \\ 100 \\ + 100 \\ \hline ? \end{array}$$

Count by 100's. Do you get 400?

Add 100's (box A). Is the sum 400?

Why is 4 in hundred's place?

Multiply. For 4×100 *think*,

4×1 hundred = $-?-$ hundreds, or 400.

B

$$\begin{array}{r} 100 \\ \times 4 \\ \hline 400 \end{array}$$

To multiply, you write the numbers as in box B. Why is the 4 of the product written in hundred's place? Why are 0's in ten's and one's places?

Say the products in Ex. 2 to 6.

2. $\begin{array}{r} 100 \\ \times 5 \\ \hline \end{array}$

3. $\begin{array}{r} 100 \\ \times 9 \\ \hline \end{array}$

4. $\begin{array}{r} 200 \\ \times 3 \\ \hline \end{array}$

5. $\begin{array}{r} 400 \\ \times 2 \\ \hline \end{array}$

6. $\begin{array}{r} 300 \\ \times 3 \\ \hline \end{array}$

You multiply hundreds like ones.

260 (two hundred sixty)

7. Mr. Brown sends 132 gallons of milk to town each day. How many gallons does he send in 3 days? $3 \times 132 = ?$

$132 = 1$ hundred and 3 tens and 2 ones.

Explain the work in boxes C to F.

Notice that the ones are multiplied first, then the tens, and then the hundreds.

| C | D | E | F |
|--|--|--|---|
| $\begin{array}{r} 2 \\ \times 3 \\ \hline 6 \end{array}$ | $\begin{array}{r} 30 \\ \times 3 \\ \hline 90 \end{array}$ | $\begin{array}{r} 100 \\ \times 3 \\ \hline 300 \end{array}$ | $\begin{array}{r} 6 \\ \rightarrow 90 \\ \rightarrow 300 \\ \hline 396 \end{array}$ |

| Hundreds | Tens | Ones |
|----------|------|------|
| 1 | 3 | 2 |
| \times | | |
| 3 | 9 | 6 |

8. Explain the short way to get 3×132 (box G).

9. For the product in box G, why is 6 in one's place? 9 in ten's place? 3 in hundred's place?

Explain the work in Ex. 10 to 14.

| | | | | |
|--|--|--|--|--|
| 10. $\begin{array}{r} 122 \\ \times 4 \\ \hline 488 \end{array}$ | 11. $\begin{array}{r} 314 \\ \times 2 \\ \hline 628 \end{array}$ | 12. $\begin{array}{r} 113 \\ \times 3 \\ \hline 339 \end{array}$ | 13. $\begin{array}{r} 223 \\ \times 3 \\ \hline 669 \end{array}$ | 14. $\begin{array}{r} \$4.23 \\ \times 2 \\ \hline \$8.46 \end{array}$ |
|--|--|--|--|--|

Tell the missing figures in Ex. 15 to 19.

| | | | | |
|--|--|--|--|--|
| 15. $\begin{array}{r} 243 \\ \times 2 \\ \hline ?86 \end{array}$ | 16. $\begin{array}{r} 213 \\ \times 3 \\ \hline ?39 \end{array}$ | 17. $\begin{array}{r} 113 \\ \times 2 \\ \hline 2?6 \end{array}$ | 18. $\begin{array}{r} 424 \\ \times 2 \\ \hline ??8 \end{array}$ | 19. $\begin{array}{r} \$3.22 \\ \times 3 \\ \hline \$9.?6 \end{array}$ |
|--|--|--|--|--|

Which multiplications are wrong? Why?

| | | | | |
|--|--|--|--|--|
| 20. $\begin{array}{r} 212 \\ \times 3 \\ \hline 636 \end{array}$ | 21. $\begin{array}{r} 324 \\ \times 2 \\ \hline 628 \end{array}$ | 22. $\begin{array}{r} 224 \\ \times 2 \\ \hline 446 \end{array}$ | 23. $\begin{array}{r} 112 \\ \times 3 \\ \hline 336 \end{array}$ | 24. $\begin{array}{r} \$1.14 \\ \times 2 \\ \hline \$2.28 \end{array}$ |
|--|--|--|--|--|

Multiplying Hundreds with Carrying

Carrying 1 ten or more [O]

In Ex. 1a, to multiply **ones**, *think*, “ $7 \times 3 = 21$.” Write “1” in one’s place in the product and carry 2 tens.

For **tens**, *think*, “ $7 \times 1 = 7$, and 2 carried are 9.” Write “9” in ten’s place.

For **hundreds**, *think*, “ $7 \times 1 = 7$.” Write “7” in hundred’s place.

Tell what to think in Ex. 1b to 1g.

| a | b | c | d | e | f | g |
|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| 1. 113 | 139 | 111 | 325 | 113 | 316 | \$2.45 |
| <u>$\times 7$</u> | <u>$\times 2$</u> | <u>$\times 8$</u> | <u>$\times 3$</u> | <u>$\times 6$</u> | <u>$\times 2$</u> | <u>$\times 2$</u> |
| 791 | 278 | 888 | 975 | 678 | 632 | \$4.90 |

[W]

For rows 2 and 3, write products on folded paper.

| | | | | | | |
|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| 2. 214 | 112 | 223 | 327 | 317 | 111 | \$1.13 |
| <u>$\times 3$</u> | <u>$\times 5$</u> | <u>$\times 4$</u> | <u>$\times 2$</u> | <u>$\times 3$</u> | <u>$\times 9$</u> | <u>$\times 5$</u> |
| 3. 112 | 429 | 112 | 348 | 229 | 211 | \$1.11 |
| <u>$\times 8$</u> | <u>$\times 2$</u> | <u>$\times 6$</u> | <u>$\times 2$</u> | <u>$\times 3$</u> | <u>$\times 4$</u> | <u>$\times 7$</u> |

► **Extra Practice.** Work Extra Practice Set 64.

Changing Numbers Around

[O]

1. $2 \times 4 = ?$ $4 \times 2 = ?$ Does changing the numbers around change the product?

2. Each of the 34 children in our room has asked 2 friends to a picnic. How many friends were asked?

For the way to find how many thirty-four 2’s are, or 34×2 , study the work at the top of page 263.

We may write Ex. 2 as in box A.
But **it is easier to change the numbers around** and work as in box B.

| A | B |
|---|--|
| $\begin{array}{r} 2 \\ \times 34 \\ \hline \end{array}$ | $\begin{array}{r} 34 \\ \times 2 \\ \hline 68 \end{array}$ |

[W]

Copy Ex. 3 to 14 and multiply. Where you need to, change the numbers around.

Check your work by multiplying a second time.

- | | | |
|-------------------|--------------------|-----------------------|
| 3. 3×231 | 7. 23×5 | 11. $3 \times \$3.16$ |
| 4. 11×5 | 8. 2×235 | 12. $6 \times \$0.32$ |
| 5. 2×316 | 9. 32×4 | 13. $3 \times \$1.28$ |
| 6. 89×3 | 10. 2×418 | 14. $7 \times \$1.13$ |

0, a Place-holder in Multiplying

[O]

In the number 20, the 0 shows there are **no ones** in one's place, and it is used to keep the 2 in the proper place (ten's).

$$3 \times 20$$



$$3 \times 20 = 3 \text{ times } 2 \text{ tens}$$

$$3 \text{ times } 2 \text{ tens} = 6 \text{ tens}$$

$$6 \text{ tens} = 60$$

In 20 there are **no ones** in one's place to be multiplied, so we put no ones in one's place in our answer. We write 0 in one's place so that the 6 will be in ten's place.

Zero (0) is used to hold numbers in their proper places.

Say the products:

- | | | | | | | |
|------------|------------|------------|------------|------------|------------|------------|
| 1. 30 | 2. 400 | 3. 20 | 4. 10 | 5. 40 | 6. 20 | 7. 100 |
| $\times 3$ | $\times 2$ | $\times 5$ | $\times 7$ | $\times 8$ | $\times 4$ | $\times 6$ |

(two hundred sixty-three) **263**

Using Zero (0) in Multiplication

Carrying 1 ten or more [O]

1. The air distance from Elson to Kent is 230 miles. How far will a plane go if it flies from Elson to Kent and then back to Elson again? $2 \times 230 = ?$

Work as in box A.

Ones: *Think,* "There is nothing (0) to be multiplied by 2." Write "0" in one's place of the product.

Tens: *Think,* " $2 \times 3 = 6$." Write "6" in ten's place.

Hundreds: *Think,* " $2 \times 2 = 4$." Write "4" in _?_ place.

2. Another plane flies 204 miles. How far will 3 times that distance be? Explain the work in box B.

| A | B | C | D | E |
|--|--|--|---|---|
| $\begin{array}{r} 230 \\ \times 2 \\ \hline 460 \end{array}$ | $\begin{array}{r} 204 \\ \times 3 \\ \hline 612 \end{array}$ | $\begin{array}{r} 202 \\ \times 4 \\ \hline ? \end{array}$ | $\begin{array}{r} \$1.03 \\ \times 7 \\ \hline ? \end{array}$ | $\begin{array}{r} \$3.09 \\ \times 3 \\ \hline ? \end{array}$ |

Copy boxes C to E at the board and finish them.

[W]

Copy and multiply by the 1-figure number.

- | | | |
|-------------------|--------------------|-----------------------|
| 3. 2×420 | 9. 408×2 | 15. $5 \times \$1.02$ |
| 4. 120×3 | 10. 3×208 | 16. $3 \times \$3.06$ |
| 5. 6×110 | 11. 7×110 | 17. 205×2 |
| 6. 4×200 | 12. 109×2 | 18. $6 \times \$1.03$ |
| 7. 2×307 | 13. 3×210 | 19. 100×8 |
| 8. 4×120 | 14. 107×3 | 20. $2 \times \$3.06$ |

► **Extra Practice.** Work Set 63.



Ann Rides in an Airplane

A., S., and M. problems [W]

A., S., or M., which? Write your work.

1. Mr. and Mrs. Brown rode with Ann to the airport. A bus ticket cost \$1.15. The 3 bus tickets cost how much?

2. Ann was to ride 365 miles on one plane and then 475 miles on another, or how many miles in all?

3. On Ann's plane there were 26 rows of 2 seats each. How many seats were there in all?

4. After going 190 miles of the 365 miles, the first plane landed. It then went the rest of the 365 miles, or how many miles, without stopping?

5. Ann's bus ticket from the airport was \$1.35. She paid with a \$5.00 bill. How much was her change?

6. Ann's trip to Haskins took 6 hours. By train it takes 3 times as long, or $-\text{?}-$ hours.

7. Ann's trip was 840 miles long. It would have been 910 miles by train. How much shorter was the plane trip?

8. Write a multiplication problem about an airplane.



Carrying Hundreds

[O]

Bob says that 240 on an orange box means "240 oranges." Bob wants to know how many oranges there are in all 3 boxes.

1. If Bob adds, what numbers will he use?

2. Are there three 240's?

3. Could Bob multiply? Why?

4. Study the work in box A.

Ones: *Think*, " $3 \times 0 = 0$." Write, "0" in the product. In what place is 0 written?

Tens: *Think*, " $3 \times 4 = 12$." Write "2" in ten's place. 12 tens = 1 hundred and 2 tens. Then what is carried?

Hundreds: *Think*, " $3 \times 2 = 6$." 6 and the 1 (hundred) carried are 7. Write "7" in hundred's place.

| A | | | |
|---|----------|----------|------|
| | Hundreds | Tens | Ones |
| | 2 | 4 | 0 |
| | | \times | 3 |
| | 7 | 2 | 0 |

Bob saw 2 boxes of oranges with the number 256 on each box. How many oranges were in the 2 boxes? Must you find 2×256 ?

| B | |
|---|------------|
| | 256 |
| | $\times 2$ |
| | 512 |

5. Explain the work in box B.

In this example you carry both a ten and a hundred. Why? Tell what to think.

Carry hundreds like tens when the product in the ten's column means 10 tens or more.

266 (two hundred sixty-six)

Carrying in Multiplication

[W]

For each example write only the answer. In Ex. 1a, *think*, “four 3’s are 12, and 2 are 14.”

| a | b | c | d |
|---------------------|------------------|------------------|------------------|
| 1. $4 \times 3 + 2$ | $6 \times 2 + 4$ | $7 \times 3 + 1$ | $3 \times 9 + 3$ |
| 2. $3 \times 5 + 2$ | $9 \times 3 + 2$ | $2 \times 9 + 2$ | $3 \times 8 + 2$ |
| 3. $3 \times 4 + 3$ | $2 \times 8 + 2$ | $6 \times 3 + 1$ | $8 \times 3 + 4$ |
| 4. $2 \times 6 + 2$ | $9 \times 2 + 3$ | $2 \times 7 + 3$ | $2 \times 5 + 3$ |

Copy and multiply. Always multiply by the number with fewer figures. Check each example by multiplying again.

| a | b | c | d | e | f | g |
|---|--|--|--|--|---|---|
| 5. $\begin{array}{r} 456 \\ \times 2 \\ \hline \end{array}$ | $\begin{array}{r} 197 \\ \times 3 \\ \hline \end{array}$ | $\begin{array}{r} 7 \\ \times 131 \\ \hline \end{array}$ | $\begin{array}{r} 296 \\ \times 3 \\ \hline \end{array}$ | $\begin{array}{r} 185 \\ \times 3 \\ \hline \end{array}$ | $\begin{array}{r} \$4.59 \\ \times 2 \\ \hline \end{array}$ | $\begin{array}{r} \$1.32 \\ \times 5 \\ \hline \end{array}$ |
| 6. $\begin{array}{r} 233 \\ \times 4 \\ \hline \end{array}$ | $\begin{array}{r} 159 \\ \times 3 \\ \hline \end{array}$ | $\begin{array}{r} 5 \\ \times 122 \\ \hline \end{array}$ | $\begin{array}{r} 396 \\ \times 2 \\ \hline \end{array}$ | $\begin{array}{r} 234 \\ \times 3 \\ \hline \end{array}$ | $\begin{array}{r} \$1.22 \\ \times 7 \\ \hline \end{array}$ | $\begin{array}{r} \$2.48 \\ \times 3 \\ \hline \end{array}$ |
| 7. $\begin{array}{r} 113 \\ \times 8 \\ \hline \end{array}$ | $\begin{array}{r} 246 \\ \times 2 \\ \hline \end{array}$ | $\begin{array}{r} 3 \\ \times 178 \\ \hline \end{array}$ | $\begin{array}{r} 189 \\ \times 3 \\ \hline \end{array}$ | $\begin{array}{r} 122 \\ \times 6 \\ \hline \end{array}$ | $\begin{array}{r} \$0.23 \\ \times 9 \\ \hline \end{array}$ | $\begin{array}{r} \$1.23 \\ \times 8 \\ \hline \end{array}$ |
| 8. $\begin{array}{r} 246 \\ \times 3 \\ \hline \end{array}$ | $\begin{array}{r} 132 \\ \times 6 \\ \hline \end{array}$ | $\begin{array}{r} 7 \\ \times 103 \\ \hline \end{array}$ | $\begin{array}{r} 356 \\ \times 2 \\ \hline \end{array}$ | $\begin{array}{r} 308 \\ \times 3 \\ \hline \end{array}$ | $\begin{array}{r} \$1.23 \\ \times 5 \\ \hline \end{array}$ | $\begin{array}{r} \$1.03 \\ \times 9 \\ \hline \end{array}$ |
| 9. $\begin{array}{r} 103 \\ \times 6 \\ \hline \end{array}$ | $\begin{array}{r} 112 \\ \times 8 \\ \hline \end{array}$ | $\begin{array}{r} 5 \\ \times 130 \\ \hline \end{array}$ | $\begin{array}{r} 123 \\ \times 7 \\ \hline \end{array}$ | $\begin{array}{r} 102 \\ \times 8 \\ \hline \end{array}$ | $\begin{array}{r} \$1.47 \\ \times 3 \\ \hline \end{array}$ | $\begin{array}{r} \$1.33 \\ \times 6 \\ \hline \end{array}$ |

 **Extra Practice.** Work Set 68.

To Keep in Practice

A., S., M. [W]

Copy and work. Check where you can.

- | | | |
|-------------------|--------------------|--------------------|
| 1. 5×123 | 6. 4×233 | 11. 102×7 |
| 2. $600 - 98$ | 7. $348 + 459$ | 12. 6×103 |
| 3. $711 - 659$ | 8. 459×2 | 13. $410 - 93$ |
| 4. 235×3 | 9. $306 - 187$ | 14. 340×2 |
| 5. 8×103 | 10. 3×240 | 15. $237 + 568$ |
16. $\$5.93 + \$0.67 + \$2.48$
17. Two dollars minus fifty-two cents.

Do You Know?

Progress Test 24 [W]

Write answers on folded paper.

- | | a | b | c | d | e | f | g |
|----|---|---|--|---|---|---|--|
| 1. | $\begin{array}{r} 103 \\ \times 5 \\ \hline \end{array}$ | $\begin{array}{r} 421 \\ + 376 \\ \hline \end{array}$ | $\begin{array}{r} 68 \\ \times 2 \\ \hline \end{array}$ | $\begin{array}{r} 320 \\ \times 3 \\ \hline \end{array}$ | $\begin{array}{r} 800 \\ - 149 \\ \hline \end{array}$ | $\begin{array}{r} 158 \\ \times 3 \\ \hline \end{array}$ | $\begin{array}{r} 740 \\ - 34 \\ \hline \end{array}$ |
| 2. | $\begin{array}{r} 412 \\ - 308 \\ \hline \end{array}$ | $\begin{array}{r} 203 \\ \times 4 \\ \hline \end{array}$ | $\begin{array}{r} 89 \\ + 376 \\ \hline \end{array}$ | $\begin{array}{r} 120 \\ \times 7 \\ \hline \end{array}$ | $\begin{array}{r} 32 \\ \times 8 \\ \hline \end{array}$ | $\begin{array}{r} 315 \\ - 68 \\ \hline \end{array}$ | $\begin{array}{r} \$1.03 \\ \times 8 \\ \hline \end{array}$ |
| 3. | $\begin{array}{r} 248 \\ 38 \\ + 197 \\ \hline \end{array}$ | $\begin{array}{r} 17 \\ 199 \\ + 288 \\ \hline \end{array}$ | $\begin{array}{r} 258 \\ 306 \\ + 271 \\ \hline \end{array}$ | $\begin{array}{r} 30 \\ 9 \\ 35 \\ + 9 \\ \hline \end{array}$ | $\begin{array}{r} 27\text{¢} \\ 16\text{¢} \\ 28\text{¢} \\ + 25\text{¢} \\ \hline \end{array}$ | $\begin{array}{r} 45 \\ 6 \\ 6 \\ 9 \\ + 2 \\ \hline \end{array}$ | $\begin{array}{r} 52\text{¢} \\ 6\text{¢} \\ 7\text{¢} \\ 10\text{¢} \\ + 8\text{¢} \\ \hline \end{array}$ |

Copy and work the example in which you

4. carry a ten.

5. carry a hundred.

6. should change the numbers around.

| | | |
|---|--|--|
| A $\begin{array}{r} 4 \\ \times 12 \\ \hline \end{array}$ | B $\begin{array}{r} 103 \\ \times 4 \\ \hline \end{array}$ | C $\begin{array}{r} 142 \\ \times 3 \\ \hline \end{array}$ |
|---|--|--|

Do You Know?

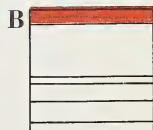
Progress Test 25 [W]

Answer Ex. 1 to 13 by writing "Yes" or "No."

1. Is 32×7 equal to 7×32 ?
2. Do 12 cookies make 1 dozen?
3. Does a quart measure hold 2 pints?
4. Must you carry in the example, 4×22 ?
5. If you buy a 39¢ book with a dollar, could your change be a penny, a dime, and a half dollar?
6. Can you drink 3 gallons of milk in one day?
7. Is 0 the product of 9×0 ?
8. Do we buy butter by the pint?
9. Do cents always take two places?
10. Are 4 quarts equal to 1 gallon?
11. Could you multiply to find $12 + 12 + 12 + 12 = ?$
12. At 8:30 o'clock, is the minute hand on 8?
13. If you multiply 1 by a number, does the product always end in 1?

Write your answers for Ex. 14 to 18.

14. What multiplication fact goes with $3 \times 9 = 27$?
15. What fraction is shown by the red part of A?
16. Is $\frac{1}{6}$ of B red?
17. Draw a line and on it mark off 3 finger inches.
18. Make a drawing which shows that $\frac{1}{2}$ of one thing is not always equal to $\frac{1}{2}$ of another thing.





Billy Helps at the Roadside Stand

Introduction to measurement division [O]

1. Billy puts 4 beets in a bunch. How many bunches of 4 beets can he make with 12 beets (picture A)?

Billy counted 4 beets and made one bunch, 4 beets more for a second bunch, and 4 more beets for a third. He made 3 equal bunches (picture B).

Check Billy's work with this dot picture.

● ● ● ● ● ● ● ● ● ● ● ● 4's in 12 = ?

Check his work by subtracting 4's from 12.

$$12 - 4 = 8 \quad (\text{one } 4 \text{ subtracted, } 8 \text{ left over})$$

$$8 - 4 = 4 \quad (\text{two } 4\text{'s subtracted, } 4 \text{ left over})$$

$$4 - 4 = 0 \quad (\text{three } 4\text{'s subtracted, } 0 \text{ left over})$$

In 12 there are $__?$ 4's. Was Billy's work right?

2. Billy has 15 apples. He puts 5 apples in each bag. How many bags of 5 apples will he have?

Use the dot picture below to find out.

● ● ● ● ● ● ● ● ● ● ● ● ● ● ● 5's in 15 = ?

Subtract 5's from 15. *Think*, " $15 - 5 = 10$, $10 - 5 = 5$, $5 - 5 = 0$. In 15 there are $__?$ 5's."

3. Billy puts 3 carrots in a bunch. With 12 carrots, how many bunches of 3 carrots can he make?

The number question is, "3's in 12 = ?"

Use the dot picture below to get the answer.

• • • • • • • • • • 3's in 12 = ?

Find out by subtracting 3's from 12.

$12 - 3 = 9$, $9 - 3 = 6$, $6 - 3 = 3$, $3 - 3 = 0$.

In 12 there are 4 3's.

4. Billy puts 7 onions in a bunch. With 14 onions, how many bunches of 7 onions can he make?

Use the dot picture to get the answer.

• • • • • • • • • • • 7's in 14 = ?

Subtract 7's from 14. $14 - 7 = 7$, $7 - 7 = 0$.

In 14 there are 2 7's.

In these examples you have been subtracting. You have also been dividing.

7's in 14 = 2 is a division (D.) fact.

When you find how many equal groups there are in a larger group, you are dividing.

Copy Ex. 5 to 13. Draw dot pictures and write the answers. Ex. 5 is done in the box. 3's in 9 = 3 is a division fact.

[W]

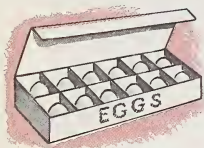
• • • • • • • •
3's in 9 = 3

- | | | |
|------------------|-------------------|-------------------|
| 5. 3's in 9 = ? | 8. 7's in 21 = ? | 11. 4's in 8 = ? |
| 6. 2's in 4 = ? | 9. 2's in 12 = ? | 12. 2's in 10 = ? |
| 7. 5's in 10 = ? | 10. 3's in 15 = ? | 13. 6's in 18 = ? |

Division Stories in Pictures

Using pictures in D. problems [W]

Copy and finish the division stories.



1. The egg box holds 12 eggs, in rows of 6. How many rows are there?

In 12 there are $_{-?}$ 6's.

6's in 12 = ?

2. The cake pan has places for 12 cupcakes in rows of 4. How many rows are there?

In 12 there are $_{-?}$ 4's.

4's in 12 = ?



3. Ann has placed 15 jacks in groups of 3. How many groups of jacks has she?

In 15 there are $_{-?}$ 3's.

3's in 15 = ?



4. Draw 8 oranges in groups of 4. Then write the number story in two ways:

In 8 there are $_{-?}$ 4's. 4's in 8 = ?

As in Ex. 4, draw pictures and write division stories in two ways for Ex. 5 to 11.

5. Draw 9 apples in groups of 3 each.

6. Draw 10 boxes in groups of 2 each.

7. Draw 12 houses in groups of 3 each.

8. Draw 6 boats. Put 2 in each group.

9. Draw 15 sticks in groups of 5 each.

10. Draw 8 balls. Put them in groups of 2.

11. Draw 18 buttons in groups of 6 each.

What Is Division?

Meaning [O]

| a | b | c | d | e |
|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| 18 | 15 | 12 | 16 | 9 |
| $\underline{-9 \text{ (1)}}$ | $\underline{-5 \text{ (1)}}$ | $\underline{-4 \text{ (1)}}$ | $\underline{-8 \text{ (1)}}$ | $\underline{-3 \text{ (1)}}$ |
| 9 | 10 | 8 | 8 | 6 |
| $\underline{-9 \text{ (2)}}$ | $\underline{-5 \text{ (2)}}$ | $\underline{-4 \text{ (2)}}$ | $\underline{-8 \text{ (2)}}$ | $\underline{-3 \text{ (2)}}$ |
| 0 | 5 | 4 | 0 | 3 |
| | $\underline{-5 \text{ (3)}}$ | $\underline{-4 \text{ (3)}}$ | | $\underline{-3 \text{ (3)}}$ |
| | 0 | 0 | | 0 |

1. In column a, use the numbers (1) and (2) to help you find how many 9's there are in 18.

9's in 18 = 2. This is a division (D.) fact.

2. How many 5's in 15 (column b)? How many 5's can you subtract? Tell the division fact.

Tell the division fact in

3. column c. 4. column d. 5. column e.

[W]

In rows 6 to 10, subtract to find each answer. First think what number you subtract and find how many times it can be subtracted. Then write the division fact.

| a | b | c |
|-------------------|---------------|---------------|
| 6. 3's in 6 = ? | 2's in 4 = ? | 9's in 27 = ? |
| 7. 2's in 8 = ? | 2's in 6 = ? | 5's in 10 = ? |
| 8. 4's in 8 = ? | 3's in 15 = ? | 7's in 14 = ? |
| 9. 2's in 10 = ? | 6's in 12 = ? | 8's in 24 = ? |
| 10. 3's in 12 = ? | 6's in 18 = ? | 7's in 21 = ? |

Finding how many equal groups you can make is dividing. The things in all the groups are like-things.

Jack's Division Problems

[W]

Read each problem. Then write the division fact.
Subtract or make dot pictures if you need to.

1. Jack carried 8 plates from the table, 2 at a time. He made how many trips? $2\text{'s in } 8 = ?$

2. Jack writes a page in 8 minutes. In 16 minutes, how many pages can he write? $8\text{'s in } 16 = ?$

3. Jack uses 2 sheets of paper for a letter. How many letters can he write on 10 sheets of paper? $2\text{'s in } 10 = ?$

4. Jack puts 3¢ stamps on postcards. With 15¢ he can buy how many stamps? $3\text{'s in } 15 = ?$

5. Jack has 12 new spelling words. The 12 words are in rows of 4. How many rows are there? $4\text{'s in } 12 = ?$

6. Jack copied the 12 words, 3 in a column. He copied how many columns? $3\text{'s in } 12 = ?$

7. Jack spent a dime for apples. At 5¢ each, how many apples did he buy? $5\text{'s in } 10 = ?$

8. Jack put 18 bottle caps in piles, 3 in a pile. How many piles had he? $3\text{'s in } 18 = ?$

9. Jack set out 15 lettuce plants in rows, 5 in each row. How many rows had he? $5\text{'s in } 15 = ?$





Two Buttons for Each Dress

D. facts, dividing by 2 [W]

1. Ann and Jean want to put 2 buttons on each doll dress. They have 6 buttons. How many groups of 2 buttons each are there in 6 buttons?

In the box at the right, find (6). Cover the buttons below (6). Study the six buttons that still show to find how many groups of 2 there are in 6.

The division story, or division fact, is 2's in 6 = 3. Copy it.



To find how many groups of 2 in each example below, cover the buttons you do not need and count 2's. Then write division facts for Ex. 2 to 9.

- | | |
|---------------|---------------|
| 2. 10 buttons | 6. 16 buttons |
| 3. 4 buttons | 7. 8 buttons |
| 4. 12 buttons | 8. 14 buttons |
| 5. 2 buttons | 9. 18 buttons |

A table of division facts for dividing by 2 is started at the right. Copy and finish it.

| Division Facts Dividing by 2 | |
|---------------------------------|--|
| 2's in 2 = 1 | |
| 2's in 4 = 2 | |
| 2's in 6 = 3 | |
| and so on to | |
| 2's in 18 = 9 | |

Buttons for Two Doll Dresses!

Division facts, quotient 2 [O]



1. Suppose that Jean and Ann put 3 buttons on a dress. Six buttons would be enough for $_\ ? _\$ dresses.

$$6 - 3 = 3, \quad 3 - 3 = 0. \quad 3\text{'s in } 6 = ?$$

2. Suppose they put 4 buttons on a dress. Eight buttons would be enough for how many dresses?

$$8 - 4 = 4, \quad 4 - 4 = 0. \quad 4\text{'s in } 8 = ?$$

The division fact for Ex. 2 can be written

$$4\text{'s in } 8 = 2 \quad \text{or} \quad \begin{array}{r} 2 \\ 4 \overline{)8} \end{array}$$

For both ways we say, "4's in 8 = 2."

[W]

Copy Ex. 3 to 10. Find answers by subtracting.

3. 2's in 4 = ?

7. 8's in 16 = ?

4. 5's in 10 = ?

8. 3's in 6 = ?

5. 4's in 8 = ?

9. 9's in 18 = ?

6. 6's in 12 = ?

10. 7's in 14 = ?

The answers in division are called **quotients**. Now write Ex. 3 to 10 with quotients at the top. For Ex. 3, write

$$\begin{array}{r} 2 \\ 2 \overline{)4} \end{array}$$

A table of the division facts with quotient 2 is started in the box. Copy and finish it.

| Division Facts Quotient 2 |
|------------------------------|
| 1's in 2 = 2 |
| 2's in 4 = 2 |
| 3's in 6 = ? |
| and so on to |
| 9's in 18 = 2 |

Pairs of Division Facts

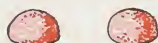
D. facts for dividing by 2 and with quotient 2 [O]

1. To how many boys can Jack give

a. 2 pieces of candy? 2's in 6 = ?



b. 3 pieces of candy? 3's in 6 = ?



If you know that **2's in 6 = 3**, you know that **3's in 6 = 2**. The two division facts go together as a **pair**.



Jack's Candy

2. a. If Joe buys 2¢ marbles with his 8¢, how many marbles can he buy? 2's in 8 = ?

b. If he buys 4¢ marbles with his 8¢? 4's in 8 = ?
2's in 8 = 4 and **4's in 8 = 2** are a pair of division facts.

3. Does 2's in 4 = 2 have another D. fact? Why?

Say each division fact and the one that goes with it.

4. 2's in 12 = ? 7. 8's in 16 = ? 10. 7's in 14 = ?

5. 5's in 10 = ? 8. 2's in 18 = ? 11. 2's in 16 = ?

6. 2's in 14 = ? 9. 6's in 12 = ? 12. 9's in 18 = ?

Division facts almost always go in pairs.

Tell ways to help you learn these division facts:

Division Facts, Dividing by 2

| | | | | | | | | |
|---|---|---|---|--|--|--|--|--|
| $\begin{array}{r} 1 \\ 2 \overline{)2} \end{array}$ | $\begin{array}{r} 2 \\ 2 \overline{)4} \end{array}$ | $\begin{array}{r} 3 \\ 2 \overline{)6} \end{array}$ | $\begin{array}{r} 4 \\ 2 \overline{)8} \end{array}$ | $\begin{array}{r} 5 \\ 2 \overline{)10} \end{array}$ | $\begin{array}{r} 6 \\ 2 \overline{)12} \end{array}$ | $\begin{array}{r} 7 \\ 2 \overline{)14} \end{array}$ | $\begin{array}{r} 8 \\ 2 \overline{)16} \end{array}$ | $\begin{array}{r} 9 \\ 2 \overline{)18} \end{array}$ |
|---|---|---|---|--|--|--|--|--|

Division Facts, Quotient 2

| | | | | | | | | |
|---|---|---|---|--|--|--|--|--|
| $\begin{array}{r} 2 \\ 1 \overline{)2} \end{array}$ | $\begin{array}{r} 2 \\ 2 \overline{)4} \end{array}$ | $\begin{array}{r} 2 \\ 3 \overline{)6} \end{array}$ | $\begin{array}{r} 2 \\ 4 \overline{)8} \end{array}$ | $\begin{array}{r} 2 \\ 5 \overline{)10} \end{array}$ | $\begin{array}{r} 2 \\ 6 \overline{)12} \end{array}$ | $\begin{array}{r} 2 \\ 7 \overline{)14} \end{array}$ | $\begin{array}{r} 2 \\ 8 \overline{)16} \end{array}$ | $\begin{array}{r} 2 \\ 9 \overline{)18} \end{array}$ |
|---|---|---|---|--|--|--|--|--|

Writing Division Facts a New Way

[O]

You have written division facts as in boxes A and B.

| |
|--|
| A 2's in 12 = 6 |
| B $\begin{array}{r} 6 \\ 2 \overline{)12} \end{array}$ |
| C $12 \div 2 = 6$ |

Box C shows a new way to write them. The sign \div means to divide, just as $+$ means to add and $-$ to subtract. Read box C this way, "12 divided by 2 is 6." A, B, and C all mean "2's in 12 = 6."

In each box the quotient is 6.

Read Ex. 1 to 6 the new way, with their quotients.

- | | | |
|--------------------|------------------------|-------------------|
| 1. $10 \div 2 = ?$ | 7. $2 \overline{)8}$ | 13. 2's in 18 = ? |
| 2. $4 \div 2 = ?$ | 8. $2 \overline{)12}$ | 14. 6's in 12 = ? |
| 3. $14 \div 2 = ?$ | 9. $5 \overline{)10}$ | 15. 8's in 16 = ? |
| 4. $18 \div 9 = ?$ | 10. $1 \overline{)2}$ | 16. 4's in 8 = ? |
| 5. $16 \div 2 = ?$ | 11. $2 \overline{)6}$ | 17. 7's in 14 = ? |
| 6. $6 \div 3 = ?$ | 12. $8 \overline{)16}$ | 18. 2's in 2 = ? |

Say quotients in Ex. 1 to 18 by columns; by rows.

[W]

Now write the work for Ex. 1 to 18 in the three ways shown in boxes A, B, and C. Make study cards for facts that you miss. The facts are on page 277.

➤ **Extra Practice.** Work Set 65.

To Keep in Practice

A., S., M. [W]

1. Subtract \$3.27 from a. \$4.00 b. \$5.12 c. \$8.13
2. Multiply by 3: a. 69 b. 209 c. \$0.75
3. Multiply by 2: a. 85 b. 320 c. \$0.97
4. Add 438 to a. 79 b. 408 c. 366

Should You Divide or Subtract?

Differentiating D. and S. [O]

From the pictures, tell what to do in Ex. 1 and 2.

1. Henry found 10 shells. He gave 2 of them away. How many did he have left?

How many 2's did Henry give away?

2. Sam had 10 shells, too. He gave them all away, 2 to each of his friends. To how many friends did Sam give shells?

How many 2's did Sam give away?

Was it hard for you to tell when to subtract and when to divide in Ex. 1 and 2? Here is a helper:



If you must subtract the same number over and over, it is shorter to divide.

[W]

Now write your work for Ex. 3 to 6.

3. All 18 children went by 2's to another room to see a play. How many groups of 2 were there?

4. Miss Wells asked 2 of the 18 children to leave the room. How many then were left in the room?

5. The play was given by 12 children. Two of them were boys. How many were girls?

6. After the play, 16 children marched by 2's back to their room. How many groups was that?

Can You Think Straight?

[W]

Write the other fact that goes with

1. $7 \times 9 = 63$ 2. $72 = \text{eight } 9\text{'s}$ 3. $5 \times 6 = 30$
 4. $13 - 8 = 5$ 5. $42 = \text{six } 7\text{'s}$ 6. $9 + 8 = 17$

Copy, and write the missing figures.

7. $10?$ 8. 407 9. 345 10. 216
 $\begin{array}{r} \times 8 \\ \hline 824 \end{array}$ $\begin{array}{r} - ?8 \\ \hline 339 \end{array}$ $\begin{array}{r} \times ? \\ \hline 690 \end{array}$ $\begin{array}{r} + ?7 \\ \hline 313 \end{array}$

Dick's Apple Trees

D. facts for dividing by 3 and with quotient 3 [O]

1. At Dick's home there are 18 apple trees, as shown in box A.

How many rows or groups of 3 trees are there? $3\text{'s in } 18 = ?$

How many columns or groups of 6 trees are there? $6\text{'s in } 18 = ?$

You have found a new pair of division facts. Say them.

2. Dick's father planted 21 more trees in 7 rows, with 3 trees in each row. In box B, the dots stand for

21 trees. Using the rows and the columns, try to find a new pair of division facts.

There are $_{-?}$ trees in each row and there are $_{-?}$ rows. $3\text{'s in } 21 = ?$

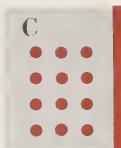
There are $_{-?}$ trees in each column and there are $_{-?}$ columns. $7\text{'s in } 21 = ?$



3. Box C shows a way to plant 12 trees. Find a new pair of division facts.

Rows: 3's in 12 = ?

Columns: 4's in 12 = ?



4. Box D shows how 15 trees may be planted. Using rows and columns, find two division facts.

Rows: 3's in 15 = ?

Columns: 5's in 15 = ?



5. Box E has 27 trees, 9 in a row.

By rows, 9's in 27 = ? By columns, 3's in 27 = ?



6. Using rows and columns, tell the two new division facts shown in box F.

Rows: 8's in _?_ = ? Columns: _?_ in _?_ = ?

7. Box G shows the division fact, 3's in 9 = 3. Does it show another division fact? Explain.

Find a picture on this page or on page 280 to show each fact below.

a

8. 3's in 15 = 5

b

7's in 21 = 3

c

3's in 12 = 4

9. 3's in 9 = 3

3's in 18 = 6

9's in 27 = 3

10. 6's in 18 = 3

3's in 27 = 9

3's in 24 = 8

11. 5's in 15 = 3

8's in 24 = 3

3's in 21 = 7

Checking Division by Subtracting

D. facts for dividing by 3 and with quotient 3 [O]

A

$$\begin{array}{r} 12 \\ -4 \text{ (1)} \\ \hline 8 \\ -4 \text{ (2)} \\ \hline 4 \\ -4 \text{ (3)} \\ \hline 0 \end{array}$$

1. After writing “4’s in $12 = 3$,” Ralph checked his work by subtracting. Why does box A show that there are three 4’s in 12?

2. Ralph also wrote “3’s in $15 = 6$.” Use box B to find how many 3’s there are in 15. Was Ralph right or wrong?

[W]

B

$$\begin{array}{r} 15 \\ -3 \text{ (1)} \\ \hline 12 \\ -3 \text{ (2)} \\ \hline 9 \\ -3 \text{ (3)} \\ \hline 6 \\ -3 \text{ (4)} \\ \hline 3 \\ -3 \text{ (5)} \\ \hline 0 \end{array}$$

Some of the divisions in Ex. 3 to 16 are wrong. Check them by subtracting, as in A and B. Write each fact the correct way.

3. 3’s in $6 = 2$

10. 7’s in $21 = 3$

4. 6’s in $18 = 4$

11. 3’s in $12 = 3$

5. 3’s in $27 = 9$

12. 8’s in $24 = 3$

6. 3’s in $21 = 5$

13. 3’s in $9 = 5$

7. 5’s in $15 = 4$

14. 2’s in $6 = 3$

8. 3’s in $24 = 8$

15. 9’s in $27 = 3$

9. 3’s in $18 = 6$

16. 4’s in $12 = 4$

Copy and finish the tables of division facts for dividing by 3 and with quotient 3. The last number to divide is 27.

Division Facts Dividing by 3

3’s in $3 = 1$

3’s in $6 = 2$

3’s in $? = 3$

? in $? = 4$

and so on to

3’s in $27 = ?$

Division Facts Quotient 3

1’s in $3 = 3$

2’s in $6 = 3$

?’s in $9 = 3$

? in $? = 3$

and so on to

9’s in $27 = ?$

Using the New Division Facts

[W]

Write the work. Subtract or use dot pictures if you need to.



1. If Kay puts 3 candles in each holder, how many holders can she fill with 15 candles?

$$3\text{'s in } 15 = ? \quad 15 \div 3 = ?$$

2. If Kay cuts a cake into 4 pieces, how many cakes will she need to make 12 pieces? $12 \div 4 = ?$

3. If 6 boys can ride in each car, how many cars will be needed for 18 boys? $18 \div 6 = ?$

4. How many 5¢ pencils can you buy with 15¢?

5. Some boys caught 24 fish. If each boy caught 8 fish, how many boys went fishing?

6. How many 7¢ toys can you buy with 21¢?

7. If you can put 9 seats in a row, how many rows can you make with 27 seats?

8. How many yards are 27 feet? (1 yard = 3 feet)

To Keep in Practice

A., S., M. [W]

1. Multiply by 8: a. 23 b. 103 c. 32 d. \$1.23

2. Multiply by 5: a. 32 b. 103 c. 120 d. 32

3. Multiply by 3: a. 152 b. 74 c. 308 d. 56

4. Subtract 359 from a. 407 b. 900 c. 611 d. 682

5. Add: a. \$5.09 + \$0.97 + \$2.33

b. $25 + 7 + 9 + 7 + 9$ c. $24 + 6 + 0 + 15$

(two hundred eighty-three) 283

Division Facts, Dividing by 3

$$\begin{array}{cccccccc} \frac{1}{3 \overline{)3}} & \frac{2}{3 \overline{)6}} & \frac{3}{3 \overline{)9}} & \frac{4}{3 \overline{)12}} & \frac{5}{3 \overline{)15}} & \frac{6}{3 \overline{)18}} & \frac{7}{3 \overline{)21}} & \frac{8}{3 \overline{)24}} & \frac{9}{3 \overline{)27}} \end{array}$$

Division Facts, Quotient 3

$$\begin{array}{cccccccc} \frac{3}{1 \overline{)3}} & \frac{3}{2 \overline{)6}} & \frac{3}{3 \overline{)9}} & \frac{3}{4 \overline{)12}} & \frac{3}{5 \overline{)15}} & \frac{3}{6 \overline{)18}} & \frac{3}{7 \overline{)21}} & \frac{3}{8 \overline{)24}} & \frac{3}{9 \overline{)27}} \end{array}$$

[O]

Use the tables to help you learn the division facts.

Say quotients by rows and by columns. Do not look at the facts above. Make study cards for hard facts.

| a | b | c | d | e | f | g |
|-----------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| 1. $4 \overline{)12}$ | $2 \overline{)6}$ | $3 \overline{)18}$ | $2 \overline{)18}$ | $5 \overline{)15}$ | $3 \overline{)27}$ | $7 \overline{)14}$ |
| 2. $5 \overline{)10}$ | $2 \overline{)16}$ | $8 \overline{)24}$ | $6 \overline{)12}$ | $8 \overline{)16}$ | $7 \overline{)21}$ | $2 \overline{)10}$ |
| 3. $3 \overline{)24}$ | $1 \overline{)3}$ | $6 \overline{)18}$ | $3 \overline{)12}$ | $2 \overline{)8}$ | $3 \overline{)6}$ | $3 \overline{)21}$ |
| 4. $3 \overline{)3}$ | $2 \overline{)14}$ | $9 \overline{)18}$ | $3 \overline{)15}$ | $9 \overline{)27}$ | $2 \overline{)12}$ | $3 \overline{)9}$ |

► **Extra Practice.** Work Set 66.

[W]

Write your work for Ex. 1 to 3.

1. What number must be added to 247 in order to get the number 516? **HELPER.** $247 + n = 516$.

2. You have not had the M. facts for 4. Try to find the answer for 4×37 . Do not multiply.

3. How many 27's are there in 108? Do not divide to find the answer.

You Can Check Your Quotient Figure

[O]

1. Even when you know the division facts, you need to check the quotient. Box A shows that in 18 there are **six** 3's. Is this quotient figure right or wrong?

2. In box B is a way to check. You multiply: $6 \times 3 = 18$. Is this **product 18** larger than the number 18 which was divided? Where was the product written?

3. In box C the product, 18, is subtracted from the number divided. Was anything left over? How does the **0** remainder help you to know there are no more 3's in 18?

4. You can also use 3×6 as a check. Why?

We multiply to check the quotient figure.

[W]

Check the quotients in Ex. 5 to 20 by multiplying. Write your work as in box C.

$$5. \begin{array}{r} 6 \\ 3 \overline{)18} \end{array}$$

$$9. \begin{array}{r} 3 \\ 7 \overline{)21} \end{array}$$

$$13. \begin{array}{r} 9 \\ 3 \overline{)27} \end{array}$$

$$17. \begin{array}{r} 3 \\ 2 \overline{)8} \end{array}$$

$$6. \begin{array}{r} 2 \\ 3 \overline{)9} \end{array}$$

$$10. \begin{array}{r} 3 \\ 4 \overline{)12} \end{array}$$

$$14. \begin{array}{r} 3 \\ 6 \overline{)18} \end{array}$$

$$18. \begin{array}{r} 3 \\ 8 \overline{)24} \end{array}$$

$$7. \begin{array}{r} 5 \\ 3 \overline{)15} \end{array}$$

$$11. \begin{array}{r} 7 \\ 3 \overline{)21} \end{array}$$

$$15. \begin{array}{r} 3 \\ 9 \overline{)27} \end{array}$$

$$19. \begin{array}{r} 1 \\ 3 \overline{)3} \end{array}$$

$$8. \begin{array}{r} 4 \\ 3 \overline{)12} \end{array}$$

$$12. \begin{array}{r} 3 \\ 5 \overline{)15} \end{array}$$

$$16. \begin{array}{r} 8 \\ 3 \overline{)24} \end{array}$$

$$20. \begin{array}{r} 4 \\ 2 \overline{)6} \end{array}$$

A

$$\begin{array}{r} 6 \\ 3 \overline{)18} \end{array}$$

← divide

B

$$\begin{array}{r} 6 \\ 3 \overline{)18} \\ \underline{18} \end{array}$$

(6 × 3) ← multiply

C

$$\begin{array}{r} 6 \\ 3 \overline{)18} \\ \underline{-18} \\ 0 \end{array}$$

← subtract

Do You Know?

Progress Test 26 [W]

Copy and write quotients. Check by multiplying.

| a | b | c | d | e | f | g |
|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| 1. $3\overline{)9}$ | $7\overline{)21}$ | $9\overline{)18}$ | $8\overline{)16}$ | $4\overline{)12}$ | $3\overline{)18}$ | $1\overline{)3}$ |
| 2. $5\overline{)15}$ | $3\overline{)6}$ | $5\overline{)10}$ | $6\overline{)12}$ | $8\overline{)24}$ | $4\overline{)8}$ | $3\overline{)27}$ |
| 3. $3\overline{)21}$ | $2\overline{)8}$ | $2\overline{)14}$ | $3\overline{)12}$ | $2\overline{)10}$ | $3\overline{)24}$ | $6\overline{)18}$ |
| 4. $9\overline{)27}$ | $2\overline{)12}$ | $3\overline{)3}$ | $2\overline{)18}$ | $3\overline{)15}$ | $2\overline{)16}$ | $7\overline{)14}$ |

Do You Understand?

Test of Information and Meaning 7

Write on your paper the missing words or figures.

- The product of any number times 0 is $-?..$
- To find how many equal groups there are in a large group, you can subtract but it is better to $-?..$
- What division fact goes with $18 \div 3 = 6$?
- The division fact $18 \div 3 = 6$ can be written as $?\overline{)18}$.
- To get $\frac{1}{8}$ of a pie you can divide the pie into $-?..$ equal pieces.
- What multiplication fact goes with $3 \times 9 = 27$?
- In 203×3 , it is better to multiply by $-?..$
- In the table of division facts for dividing by 2, the largest number to be divided is $-?..$
- If you know $4 \times 3 = 12$, you can find 5×3 by adding $-?..$ to 12.

Do what you are told to do in Ex. 10 to 17.

10. Show with dots that there is no division fact to make a pair with $9 \div 3 = 3$.

11. Write "3's in $15 = 5$ " in two other ways.

12. Write a multiplication example in which you must carry 2 tens.

13. Write the two division facts shown in the dot picture.



14. Check this example by adding: $4 \times 25 = 104$.

15. Write the division sign.

Copy the letter of the rectangle in which

16. $\frac{1}{8}$ is red.

A



B



17. $\frac{1}{8}$ is green.

To Keep in Practice

A., S., M. [W]

Copy and work. Check where you can.

| | | | | |
|------------|------------------------------|------------|------------------------------|--------------|
| 1. 530 | 2. 102 | 3. 709 | 4. 32 | 5. \$9.21 |
| <u>-88</u> | <u>$\times 9$</u> | <u>+89</u> | <u>$\times 6$</u> | <u>-5.78</u> |

| | | | | |
|------------------------------|-------------|------------------------------|------------|--------------|
| 6. 358 | 7. 579 | 8. 102 | 9. 78 | 10. \$5.14 |
| <u>$\times 2$</u> | <u>-470</u> | <u>$\times 7$</u> | <u>+46</u> | <u>-4.69</u> |

| | | | | |
|------------|------------------------------|-------------|------------------------------|------------------------------|
| 11. 841 | 12. 120 | 13. 70 | 14. 98 | 15. 23¢ |
| <u>-64</u> | <u>$\times 8$</u> | <u>+460</u> | <u>$\times 3$</u> | <u>$\times 4$</u> |

16. $13 + 9 + 47 + 26$

17. $347 + 49 + 455$

18. $6¢ + 7¢ + 5¢ + 5¢ + 8¢$

19. $\$1.34 + \$4.85 + \$2.85$

(two hundred eighty-seven) 287

Do You Make Mistakes?

Diagnostic Test 7

Write answers on folded paper.

| | a | b | c | d | Study Pages | Practice Sets |
|---------------------------------|--|--|--|---|----------------------|---------------|
| 1. | $\begin{array}{r} 47 \\ \times 2 \\ \hline \end{array}$ | $\begin{array}{r} 39 \\ \times 3 \\ \hline \end{array}$ | $\begin{array}{r} 23¢ \\ \times 6 \\ \hline \end{array}$ | $\begin{array}{r} 32 \\ \times 8 \\ \hline \end{array}$ | 256-257 | 61, 62 |
| 2. | $\begin{array}{r} 100 \\ \times 3 \\ \hline \end{array}$ | $\begin{array}{r} 122 \\ \times 4 \\ \hline \end{array}$ | $\begin{array}{r} 326 \\ \times 2 \\ \hline \end{array}$ | $\begin{array}{r} \$1.23 \\ \times 5 \\ \hline \end{array}$ | 260-262, 266-267 | 64, 68 |
| 3. | $\begin{array}{r} 110 \\ \times 6 \\ \hline \end{array}$ | $\begin{array}{r} 240 \\ \times 3 \\ \hline \end{array}$ | $\begin{array}{r} 102 \\ \times 7 \\ \hline \end{array}$ | $\begin{array}{r} \$2.03 \\ \times 4 \\ \hline \end{array}$ | 263-264 | 63 |
| 4. | $\begin{array}{r} 2 \overline{)16} \end{array}$ | $\begin{array}{r} 4 \overline{)8} \end{array}$ | $\begin{array}{r} 2 \overline{)10} \end{array}$ | $\begin{array}{r} 7 \overline{)14} \end{array}$ | 275-277 | 65 |
| 5. | $\begin{array}{r} 3 \overline{)3} \end{array}$ | $\begin{array}{r} 9 \overline{)27} \end{array}$ | $\begin{array}{r} 4 \overline{)12} \end{array}$ | $\begin{array}{r} 3 \overline{)21} \end{array}$ | 280-282, 284, 285 | 66 |
| Check quotients by multiplying. | | | | | | |

How Well Can You Figure?

Computation Test 7

Copy and work. Check division by multiplying.

1. 7×103

5. $805 - 67$

9. 237×3

2. $715 - 685$

6. 4×213

10. 2×87

3. $\begin{array}{r} 3 \overline{)24} \end{array}$

7. $413 - 249$

11. $\$9.00 - \6.73

4. $386 - 89$

8. $842 - 483$

12. $361 - 286$

13. $423 + 47 + 279$

15. $6¢ + 9¢ + 8¢ + 8¢ + 4¢$

14. $\$3.87 + \4.38

16. $28 + 7 + 9 + 9 + 2$



Can You Solve Problems?

Problem Test 7

1. The girls in the picture broke up into groups of 6 for games. The picture shows there are $_?$ 6's in 18.
2. In our school there are 410 children. Of these, 223 are boys. How many are girls?
3. How many children are there in 2 classes if there are 35 children in each class?
4. Each boy and girl in our room is to bring 2 old books to send away. If all 26 boys and girls bring books, how many books shall we have?
5. In one school week in April, 12, 9, 16, 7, and 8 old books were brought. How many books did we get that week in April?
6. We piled the books in groups of 8. How many groups did 24 books make?
7. When we had 50 books, 38 of them were taken away. How many of the 50 books were left?
8. We want to earn \$8.00 to buy new books in September. We now have \$6.25. How much more do we need to earn before September?



Roman Numbers

[O]

1. This picture shows how the Roman children used letters for numbers. Tell some places where you see Roman numerals used today.

2. Why is it easy to remember **I** for 1? **II** for 2? **III** for 3? Write 1, 2, 3 on the board in Roman numerals.

3. The Roman numeral for 5 is only one letter, too. **V** stands for 5. Write 1, 2, 3, 5 in Roman numerals.

4. When Romans wanted to show "1 less than," they put I before a number, as in **IV**. Then **IV** = ?

5. Now write the Roman numeral for 1; 2; 3; 4; 5.

6. In the same way, the Romans put I after a number to show "1 more than." Then **VI** = _?_ and **VII** = _?_.

7. What does **VIII** mean?

8. Another Roman number was **X**. It means "10." Can you see two V's in X (two 5's)? Write the Roman numeral for 10.

9. What does I before X mean, as in **IX**?

10. Write the Roman number for 5; 6; 7; 8; 9; 10.

11. Make the Roman numeral for 10 and 1 more, or 11; for 10 and 2 more, or 12.

[W]

12-20. Write our numbers for these:

VI III VIII IX II XII IV XI VII

21-31. Write the Roman numerals for these:

5 12 7 10 8 11 3 9 2 6 4

(two hundred ninety-one) 291



The Class Talks Things Over

Whole stories in M. and D. [O]

One day Miss Wells said, "There are whole stories in multiplication and division, too." Then she asked 6 children to sit at the table, as in the picture. Can you see that three 2's = 6?

1. What is the other multiplication fact that goes with three 2's = 6?

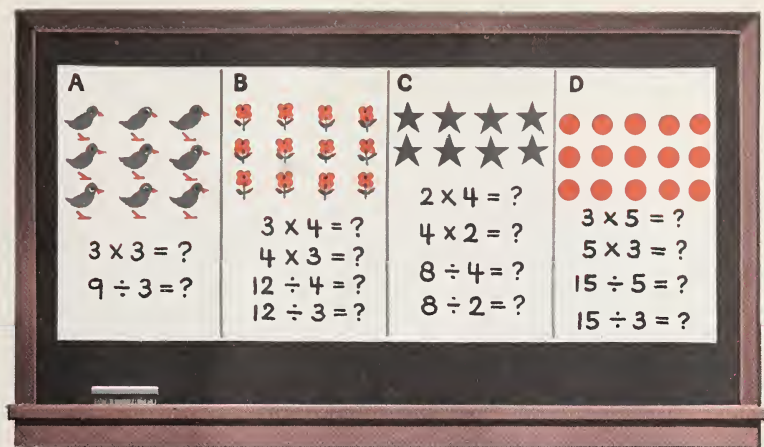
2. What two division facts does the picture show?

2's in 6 = ?

3's in 6 = ?

Now you have found the four facts that make **the whole story in multiplication and division** for 2, 3, and 6.

3. Say the whole story about 2, 3, and 6.



4. Miss Wells then pointed to picture A. How many facts are in this whole story in multiplication and division for 3, 3, and 9? Explain.

[W]

5. Write the whole story in multiplication and division about 3, 3, and 9.

6. Copy and finish the whole story in multiplication and division about 3, 4, and 12. Picture B will help you.

7. Write the whole story in multiplication and division for picture C.

8. Write the whole story in multiplication and division for picture D.

Every multiplication or division fact is part of a whole story. Some whole stories have two parts. Some have four parts.

Making Whole Stories

M. and D. facts [O]

1. The cars in picture A are parked in ? rows, with ? cars in each row, making 20 cars in all.



2. Find, in picture A, the four facts in the whole story in multiplication and division about 4, 5, and 20.

M. Facts

$$? \times 5 = 20$$

$$? \times 4 = 20$$

D. Facts

$$20 \div 5 = ?$$

$$20 \div 4 = ?$$

3. In picture B, the cars are in ? rows, with ? in a row, or 32 in all.

4. The whole story in M. and D. for 4, 8, and 32 is

$$? \times 8 = 32$$

$$32 \div 8 = ?$$

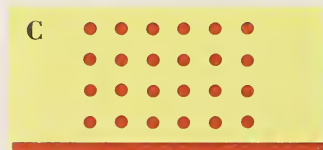
$$? \times 4 = 32$$

$$32 \div 4 = ?$$

Tell the whole stories for

5. dot picture C.

6. dot picture D.



7. The lower window in the picture shows the whole story in multiplication and division about 4, 7, and 28. Say the four parts or facts in this whole story.

8. The top window shows the whole story about 4, 4, and 16. How many parts has this story? Say the parts.

[W]

Ex. 9 to 16 are whole stories with missing numbers. Copy, putting in the missing numbers.



9. $4 \times 3 = 12$ 12. $4 \times 5 = 20$

$? \times 4 = ?$

$? \times 4 = ?$

$12 \div 3 = 4$

$20 \div 5 = ?$

$12 \div ? = ?$

$20 \div ? = ?$

10. $4 \times 2 = 8$ 13. $7 \times 4 = 28$

$? \times 4 = ?$

$? \times 7 = 28$

$8 \div 2 = 4$

$28 \div 4 = ?$

$8 \div ? = ?$

$28 \div ? = ?$

11. $4 \times 6 = 24$ 14. $9 \times 4 = 36$

$? \times 4 = ?$

$? \times 9 = 36$

$24 \div 6 = ?$

$36 \div 4 = ?$

$24 \div ? = ?$

$36 \div ? = ?$

15. $4 \times 8 = 32$

$? \times 4 = ?$

$32 \div 8 = ?$

$32 \div ? = ?$

16. $4 \times 4 = 16$

$16 \div ? = ?$

Draw dot pictures to show the whole story for Ex. 9; for Ex. 13; for Ex. 15; for Ex. 16.

The M. Facts for 4's and for 4

[W]

Draw pictures for Ex. 1 to 5. Beside each picture, write the 2 multiplication facts it shows.

1. 4 rows of chairs, 6 chairs in a row
2. 7 rows of buttons, 4 buttons in a row
3. 4 rows of bells, 3 bells in a row
4. 9 rows of X's, 4 X's in a row
5. 4 rows of boxes, 5 boxes in a row

Some of the products below are wrong. Add to check and write the correct fact. Then write the other fact that goes with it to make a pair.

- | | | |
|-----------------------|-----------------------|-----------------------|
| 6. $4 \times 5 = 24$ | 12. $4 \times 3 = 16$ | 18. $4 \times 2 = 8$ |
| 7. $4 \times 7 = 28$ | 13. $2 \times 4 = 6$ | 19. $5 \times 4 = 24$ |
| 8. $6 \times 4 = 20$ | 14. $4 \times 9 = 32$ | 20. $4 \times 8 = 32$ |
| 9. $9 \times 4 = 36$ | 15. $7 \times 4 = 21$ | 21. $4 \times 6 = 24$ |
| 10. $4 \times 8 = 28$ | 16. $4 \times 4 = 16$ | 22. $7 \times 4 = 28$ |
| 11. $4 \times 9 = 30$ | 17. $8 \times 4 = 32$ | 23. $3 \times 4 = 12$ |

Copy and finish the tables of multiplication facts started below for 4's and for 4.

M. Facts for 4's

$$\begin{array}{l} 1 \times 4 = 4 \\ 2 \times 4 = 8 \\ 3 \times 4 = ? \\ \text{and so on to} \\ 9 \times 4 = ? \end{array}$$

M. Facts for 4

$$\begin{array}{l} 4 \times 1 = 4 \\ 4 \times 2 = 8 \\ 4 \times 3 = ? \\ \text{and so on to} \\ 4 \times 9 = ? \end{array}$$





Problems about 4's and about 4

Multiplication [W]

1. Rusty bought 4 candy fish costing 5¢ each. How much did he pay for them?

Find the answer for Ex. 1 by adding, as in box A. Then write the M. fact you can use (box B).

Work Ex. 2 to 11 these same two ways.

| | | |
|---|------|--------|
| A | | |
|  | (5¢) | 5¢ |
|  | (5¢) | 5¢ |
|  | (5¢) | 5¢ |
|  | (5¢) | 5¢ |
| | | $+ 5¢$ |
| | | ? |
| B | | |
| $4 \times 5¢ = ?$ | | |

2. Jack bought 4 stamps at 3¢ each. How much did he pay?

3. Sue puts 9 nuts on a cake. For 4 cakes, how many nuts will she need?

4. Mary got 4 eggs from each of her 8 hens last week. How many eggs in all did she get?

5. Four apples at 6¢ each cost how much?

6. If a lollipop costs 7 cents, how much will 4 cost?

7. To make a box, Tom uses 8 nails. To make 4 boxes of this kind, how many nails does Tom need?

8. Four children sit at a table. How many children can sit at 5 such tables?

9. How many quarters are the same amount of money as \$3? (Remember, there are 4 quarters in a dollar.)

10. Sam found 4 eggs in each nest. How many eggs did he find in 2 nests?

11. Joe's brother earns \$4 a day. How much does he earn in 5 working days?

Multiplication Facts for 4's

| | | | | | | | | |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| $\times 1$ | $\times 2$ | $\times 3$ | $\times 4$ | $\times 5$ | $\times 6$ | $\times 7$ | $\times 8$ | $\times 9$ |
| 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 |

Multiplication Facts for 4

| | | | | | | | | |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| $\times 4$ | $\times 4$ | $\times 4$ | $\times 4$ | $\times 4$ | $\times 4$ | $\times 4$ | $\times 4$ | $\times 4$ |
| 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 |

[O]

Use the tables to help you learn the M. facts.

Say the products below by rows and by columns.
Make study cards for hard facts.

| a | b | c | d | e | f | g | h | i |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| 1. 3 | 1 | 8 | 9 | 5 | 2 | 4 | 4 | 2 |
| $\times 7$ | $\times 4$ | $\times 3$ | $\times 2$ | $\times 4$ | $\times 8$ | $\times 7$ | $\times 9$ | $\times 7$ |

| | | | | | | | | |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| 2. 3 | 4 | 3 | 4 | 4 | 9 | 3 | 5 | 3 |
| $\times 9$ | $\times 4$ | $\times 6$ | $\times 2$ | $\times 8$ | $\times 3$ | $\times 4$ | $\times 3$ | $\times 3$ |

| | | | | | | | | |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| 3. 4 | 7 | 6 | 7 | 8 | 4 | 3 | 8 | 2 |
| $\times 1$ | $\times 2$ | $\times 4$ | $\times 3$ | $\times 2$ | $\times 6$ | $\times 5$ | $\times 4$ | $\times 5$ |

| | | | | | | | | |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| 4. 7 | 6 | 9 | 4 | 3 | 2 | 2 | 4 | 3 |
| $\times 4$ | $\times 3$ | $\times 4$ | $\times 5$ | $\times 8$ | $\times 4$ | $\times 9$ | $\times 3$ | $\times 2$ |

► **Extra Practice.** Work Extra Practice Set 67.



Planting the Garden

A., S., M., and D. problems [W]

Write your work for Ex. 1 to 6.

1. Tom's uncle paid \$1.65 for seeds and \$3.85 for fertilizer. How much did these things cost?

2. Of the 100 pounds of fertilizer, he used 65 pounds. How many pounds of fertilizer were left?

3. Tomato plants cost 30¢ a dozen. Tom's uncle bought 4 dozen plants. How much did the plants cost?

4. Tom set out 18 tomato plants in rows of 6. How many rows did he have?

5. Tom's uncle bought 3 pounds of onion sets at 25¢ a pound. How much did the onion sets cost?

6. Tom worked 35 minutes one day, 45 minutes the next day, and 20 minutes the next day. In the three days, how many minutes did he work?

To Keep in Practice

A., S., M. [W]

Work these examples and check:

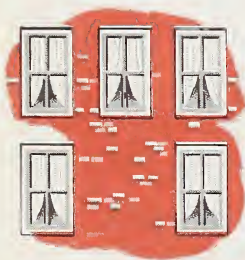
- | | | |
|--------------------------|--------------------------------|-----------------------|
| 1. 4×237 | 6. $88 + 465$ | 11. 44×9 |
| 2. 143×6 | 7. $864 - 703$ | 12. $940 - 836$ |
| 3. $342 + 538$ | 8. 7×140 | 13. $613 - 594$ |
| 4. $800 - 269$ | 9. $711 - 284$ | 14. $721 - 469$ |
| 5. 89×4 | 10. $5 \times \$1.44$ | 15. $4 \times \$1.24$ |
| 16. $5 + 9 + 8 + 6 + 7$ | 18. $348 + 37 + 420$ | |
| 17. $46 + 8 + 9 + 7 + 6$ | 19. $\$2.41 + \$1.88 + \$3.48$ | |

Division Facts for Dividing by 4

[O]

1. It takes 4 pieces of glass for a window. Then 20 pieces are enough for how many windows?

The question you need to answer is, How many 4's are there in 20? $20 \div 4 = ?$



Make 20 dots, putting them in groups of 4.

Then *think*, " $5 \times 4 = 20$ is the multiplication fact that goes with the division example $20 \div 4 = ?$ "

Are there five 4's in 20?

In Ex. 2 to 7, use dot pictures and M. facts. How many windows of 4 pieces each can be made from

- | | |
|------------------------|------------------------|
| 2. 12 pieces of glass? | 5. 16 pieces of glass? |
| 3. 24 pieces of glass? | 6. 28 pieces of glass? |
| 4. 32 pieces of glass? | 7. 36 pieces of glass? |

Check the quotients below by subtracting 4's, as in box A for Ex. 8. Then write correct facts for Ex. 8 to 16.

$$8. \begin{array}{r} 3 \\ 4 \overline{)12} \end{array}$$

$$11. \begin{array}{r} 5 \\ 4 \overline{)16} \end{array}$$

$$14. \begin{array}{r} 4 \\ 4 \overline{)20} \end{array}$$

$$9. \begin{array}{r} 6 \\ 4 \overline{)28} \end{array}$$

$$12. \begin{array}{r} 3 \\ 4 \overline{)8} \end{array}$$

$$15. \begin{array}{r} 8 \\ 4 \overline{)36} \end{array}$$

$$10. \begin{array}{r} 1 \\ 4 \overline{)4} \end{array}$$

$$13. \begin{array}{r} 9 \\ 4 \overline{)32} \end{array}$$

$$16. \begin{array}{r} 6 \\ 4 \overline{)24} \end{array}$$

A

$$\begin{array}{r} 12 \\ -4 \text{ (1)} \\ \hline 8 \\ -4 \text{ (2)} \\ \hline 4 \\ -4 \text{ (3)} \\ \hline 0 \end{array}$$

Box B shows that the quotient, 5, is too small. Why?

When you subtract 20 from 24, 4 is left over. So **there is another 4 in 24.**

B

$$\begin{array}{r} 5 \\ 4 \overline{)24} \\ -20 \text{ (5} \times 4\text{)} \\ \hline 4 \\ \text{(wrong)} \end{array}$$

Check quotients in Ex. 17 to 25 by multiplying, as shown in box B. Write the correct facts for Ex. 17 to 25.

$$17. 24 \div 4 = 5$$

$$20. 20 \div 4 = 5$$

$$23. 28 \div 4 = 6$$

$$18. 16 \div 4 = 3$$

$$21. 4 \div 4 = 1$$

$$24. 8 \div 4 = 2$$

$$19. 32 \div 4 = 6$$

$$22. 12 \div 4 = 3$$

$$25. 36 \div 4 = 8$$

26. Copy and finish the table of division facts for dividing by 4. Use the quotients you found in Ex. 8 to 25.

27. After each D. fact in your table, write the other D. fact that goes with it.

28. Which division fact has no other fact to go with it?

Division Facts
Dividing by 4

$$4 \div 4 = 1$$

$$8 \div 4 = 2$$

$$12 \div 4 = ?$$

and so on to

$$36 \div 4 = ?$$



Pasting Pictures in a Scrapbook

D. facts, quotient 4 [W]

1. Susan has 32 little pictures of her friends. If she pastes them in her scrapbook 8 in a row, how many rows can she make? How many 8's in 32?

Make 32 dots. Put them in groups of 8.

Subtract 8's from 32 until nothing is left.

Write the multiplication fact that goes with the division example, $32 \div 8 = ?$

Write the division fact that goes with $32 \div 8 = ?$

Find answers for Ex. 2 to 6 in any two of the four ways.

How many rows will Susan have if she pastes

2. 24 pictures in rows of 6?
3. 12 pictures in rows of 3?
4. 28 pictures in rows of 7?
5. 20 pictures in rows of 5?
6. 36 pictures in rows of 9?

Copy Ex. 7 to 14 and finish. Then write under each division fact the multiplication fact that goes with it.

7. $8 \div 2$ 9. $24 \div 6$ 11. $32 \div 8$ 13. $36 \div 9$
 8. $16 \div 4$ 10. $12 \div 3$ 12. $20 \div 5$ 14. $28 \div 7$

Copy Ex. 15 to 23 and write the quotients. Find the quotients by subtracting.

15. $8 \overline{)32}$ 18. $5 \overline{)20}$ 21. $2 \overline{)8}$
 16. $4 \overline{)16}$ 19. $9 \overline{)36}$ 22. $7 \overline{)28}$
 17. $1 \overline{)4}$ 20. $6 \overline{)24}$ 23. $3 \overline{)12}$

24. Copy and finish the table of division facts with quotient 4. Use the quotients you found for Ex. 15 to 23.

Division Facts
Quotient 4

| |
|-----------------|
| $4 \div 1 = 4$ |
| $8 \div 2 = 4$ |
| $12 \div 3 = ?$ |
| and so on to |
| $36 \div 9 = ?$ |

Oral Problems in Division

Measurement D.

- If Joe carries 4 fruit jars at a time to the cupboard, he must make $_{-?}$ trips for 24 jars.
- If pencils are 8¢ each, you can buy $_{-?}$ for 32¢.
- Sally has 28 pieces of candy. She can give 4 pieces to each of $_{-?}$ girls.
- If Joe gives 4 pails of corn a day to his hens, 32 pails will last $_{-?}$ days.
- If candy bars are 5¢ each, you can buy $_{-?}$ for 20¢.
- If you put 6 flowers in a bowl, you will need $_{-?}$ bowls for 24 flowers.

Division Facts, Dividing by 4

| | | | | | | | | |
|----------------------------|----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| $\frac{1}{4}\overline{)4}$ | $\frac{2}{4}\overline{)8}$ | $\frac{3}{4}\overline{)12}$ | $\frac{4}{4}\overline{)16}$ | $\frac{5}{4}\overline{)20}$ | $\frac{6}{4}\overline{)24}$ | $\frac{7}{4}\overline{)28}$ | $\frac{8}{4}\overline{)32}$ | $\frac{9}{4}\overline{)36}$ |
|----------------------------|----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|

Division Facts, Quotient 4

| | | | | | | | | |
|----------------------------|----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| $\frac{4}{1}\overline{)4}$ | $\frac{4}{2}\overline{)8}$ | $\frac{4}{3}\overline{)12}$ | $\frac{4}{4}\overline{)16}$ | $\frac{4}{5}\overline{)20}$ | $\frac{4}{6}\overline{)24}$ | $\frac{4}{7}\overline{)28}$ | $\frac{4}{8}\overline{)32}$ | $\frac{4}{9}\overline{)36}$ |
|----------------------------|----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|

[O]

Use the tables to help you learn the division facts.

Say the quotients by rows and by columns. Make study cards for hard facts.

| | a | b | c | d | e | f | g | h |
|----|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| 1. | $6\overline{)24}$ | $3\overline{)27}$ | $4\overline{)16}$ | $7\overline{)21}$ | $4\overline{)24}$ | $9\overline{)18}$ | $4\overline{)4}$ | $9\overline{)36}$ |
| 2. | $7\overline{)28}$ | $2\overline{)16}$ | $3\overline{)15}$ | $4\overline{)32}$ | $7\overline{)14}$ | $4\overline{)20}$ | $3\overline{)21}$ | $4\overline{)28}$ |
| 3. | $6\overline{)18}$ | $5\overline{)20}$ | $4\overline{)8}$ | $3\overline{)24}$ | $5\overline{)15}$ | $8\overline{)24}$ | $4\overline{)36}$ | $2\overline{)8}$ |
| 4. | $9\overline{)27}$ | $8\overline{)16}$ | $3\overline{)12}$ | $2\overline{)14}$ | $8\overline{)32}$ | $2\overline{)18}$ | $4\overline{)12}$ | $3\overline{)18}$ |

➤ **Extra Practice.** Work Extra Practice Set 69. Then do rows 3 and 4 above once more.

Do You Know?

Progress Test 27 [W]

1 to 4. Turn to page 298. Use a book to cover the tables at the top of the page. On folded paper, write the products for rows 1 to 4.

Measures of Time

[O]

Father Time is supposed to measure all time for us. He knows the facts in the table on page 164 and all the new facts in the table below. You will want to learn the new facts.



Cover the names for the days of the week and the months of the year and try to spell them.

7 days (da.) = 1 week (wk.)

4 weeks = 1 month (mo.)

12 months = 1 year (yr.)

Days of the Week

Sunday

Monday

Tuesday

Wednesday

Thursday

Friday

Saturday

Months of the Year

January

July

February

August

March

September

April

October

May

November

June

December

Do You Know?

Progress Test 28 [W]

1 to 4. Cover the tables at the top of page 304. On folded paper, write the quotients for rows 1 to 4.

Then copy and work these examples:

5. 4×79

6. 3×269

7. 34×8

8. 114×7

9. 3×48

10. $2 \times \$1.85$

11. 42×6

12. 124×5

(three hundred five) **305**

Written Practice

Whole stories in M. and D.

Copy and finish Ex. 1. Under it, write the other facts in its whole story. Do the same for Ex. 2 to 30.

- | | | |
|-----------------|------------------|------------------|
| 1. 3×2 | 11. $18 \div 9$ | 21. 4×3 |
| 2. 2×5 | 12. 5×2 | 22. $16 \div 4$ |
| 3. 3×8 | 13. $27 \div 9$ | 23. 4×6 |
| 4. 7×3 | 14. $8 \div 4$ | 24. $28 \div 4$ |
| 5. $16 \div 2$ | 15. 2×7 | 25. 5×4 |
| 6. $12 \div 4$ | 16. 2×3 | 26. 2×4 |
| 7. 2×9 | 17. 2×8 | 27. 3×6 |
| 8. $10 \div 5$ | 18. 5×3 | 28. $15 \div 3$ |
| 9. $12 \div 3$ | 19. $15 \div 5$ | 29. $6 \div 3$ |
| 10. $12 \div 2$ | 20. $18 \div 6$ | 30. 3×7 |

To Keep in Practice

A., S., M. [W]

Copy, work, and check each example.

- | | | |
|---|------------------|--------------------|
| 1. 2×23 | 5. $312 - 88$ | 9. 2×64 |
| 2. $400 - 62$ | 6. 4×35 | 10. $67 + 489$ |
| 3. 2×43 | 7. $264 - 104$ | 11. 3×160 |
| 4. $389 + 567$ | 8. 3×74 | 12. $700 - 628$ |
| 13. $\$4.28 + \$0.69 + \$3.52$ | | |
| 14. $\$0.68 + \$0.37 + \$0.49 + \0.87 | | |
| 15. Nine dollars minus six dollars and five cents | | |

Equal Parts

Unit fraction of object and of group [O]

When we divide a thing or a group into equal parts, we use a number called a fraction to tell how large each of the parts is.

1. This stick of candy has been divided into $-\ ? -$ equal parts. Each of the parts is $-\ ? -$ of the whole stick.



The fraction $\frac{1}{4}$ names one of the equal parts, and tells its size. Put your finger on $\frac{1}{4}$ of the candy.

2. This group of 8 flowers has been divided into $-\ ? -$ equal parts.

Because there are 2 equal parts, each part is $\frac{1}{2}$ of the 8 flowers.



3. The fraction $\frac{1}{2}$ names one of the equal parts and tells its size. Cover $\frac{1}{2}$ of the 8 flowers.

In $\frac{1}{2}$ of 8 flowers there are $-\ ? -$ flowers.

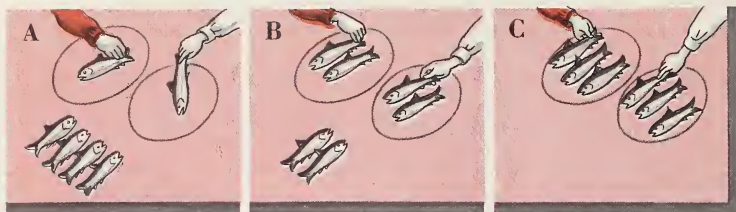
4. This time a group of 8 flowers is divided into $-\ ? -$ equal parts. The name of each equal part is $-\ ? -$. The size of each of the parts is $-\ ? -$ of the whole group. Put your finger on $\frac{1}{4}$ of 8 flowers.



In $\frac{1}{4}$ of 8 flowers there are $-\ ? -$ flowers.

A fraction is a number which may stand for one of the equal parts of a thing or of a group.

The fraction name tells how large each part is.



Sharing Equally

Meaning of fractional-part D. [O]

1. Ralph and Tom shared 6 fish equally. Look at the pictures. Each boy took 1 fish and put it in his circle (picture A), then another (picture B), and then another (picture C). Then the fish were in equal groups. How many fish were in each of the equal groups?

[W]

For Ex. 2 to 9, show by drawings the number of things in each of the equal groups.

For Ex. 2, to show 6 jacks in 3 equal groups, draw 3 circles. Draw 1 jack in the first circle and count "1," then another in the second circle and count "2," and so on until you count "6."



- | | |
|----------------------------|-----------------------------|
| 2. 6 jacks, 3 equal groups | 6. 15 bells, 3 equal groups |
| 3. 9 balls, 3 equal groups | 7. 12 flags, 4 equal groups |
| 4. 8 trees, 2 equal groups | 8. 18 nuts, 3 equal groups |
| 5. 16 hats, 2 equal groups | 9. 14 stars, 2 equal groups |

When you divide a group into equal parts, you are putting the same number of things in each part.

In a group if there are [O]

2 equal parts, each part is $\frac{1}{2}$;

3 equal parts, each part is $\frac{1}{3}$;

4 equal parts, each part is $\frac{1}{4}$.

10. For each picture (D to I), tell how many equal parts there are.

11. The fraction story for picture D is, "In $\frac{1}{2}$ of 6 balls there are 3 balls." Tell the fraction stories for E to I. [W]

12. Draw 8 kites in 2 equal groups. In $\frac{1}{2}$ of 8 kites there are $_?$ kites.

Draw groups and write the fraction story for

13. nine leaves, to show thirds.

14. twelve hats, to show halves.

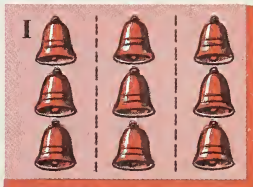
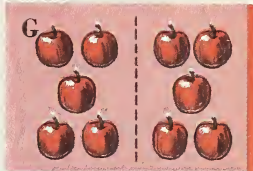
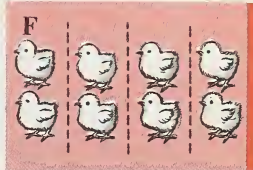
15. fifteen sticks, to show thirds.

16. eight buttons, to show fourths.

To find with numbers how many in $\frac{1}{2}$ of 8, we may divide 8 by 2. We can write the division two ways:

$$\begin{array}{r} 4 \\ 2 \overline{)8} \end{array} \quad \text{or} \quad 8 \div 2 = 4$$

Beside your work for each of Ex. 13 to 16, write the division in two ways.



To find how many there are in each of the equal parts or shares of a group, you can divide.



Problems in Sharing

Fractional-part D. [W]

1. Patty divided 12 pancakes equally among 3 plates. How many were on each plate?

The number question is: In $\frac{1}{3}$ of 12 pancakes there are $__?$ pancakes. $\frac{1}{3}$ of 12 = ?

$$\begin{array}{r} 4 \\ 3 \overline{)12} \end{array}$$

Write the short number question and then work the division example for each of Ex. 2 to 6. For Ex. 2 the short number question is $\frac{1}{3}$ of 18 = ?

2. Patty made 18 pancakes, and 3 people shared them equally. How many did each one eat?

3. If 4 people share 12 pieces of butter equally, how many pieces of butter does each one get?

4. At a party, 4 boys ate 16 cakes. If they shared them equally, how many did each boy eat?

5. If 15¢ was divided equally among three girls, how much did each girl get?

6. Nan cut a 12-foot rope into two equal parts for jump ropes. How long was each jump rope?

Making Sharing Problems in Division

[W]

Write good questions to make sharing problems.

- | | |
|---------------------------|------------------------|
| 1. 20 potatoes, 4 baskets | 7. 6 children, 2 sleds |
| 2. 12 birds, 3 cages | 8. 15 sticks, 3 piles |
| 3. 18 sheep, 2 pens | 9. 21 candles, 3 cakes |
| 4. 8 wheels, 2 wagons | 10. 4 quarts, 4 people |
| 5. 32 trees, 4 kinds | 11. 4 hours, 2 shows |
| 6. 24 people, 4 cars | 12. 3 feet, 3 pieces |

Written Practice

D. facts

Copy and finish the examples in rows 1 to 9. Then write each example another way, with its answer.

- | a | b | c | d |
|------------------------|---------------------|---------------------|---------------------|
| 1. $\frac{1}{2}$ of 10 | $2\overline{)14}$ | $24 \div 3$ | $2\overline{)16}$ |
| 2. $2\overline{)18}$ | $12 \div 4$ | $2\overline{)6}$ | $3\overline{)15}$ |
| 3. $20 \div 4$ | $\frac{1}{3}$ of 15 | $\frac{1}{4}$ of 12 | $2\overline{)8}$ |
| 4. $3\overline{)12}$ | $3\overline{)27}$ | $2\overline{)10}$ | $21 \div 3$ |
| 5. $\frac{1}{4}$ of 16 | $\frac{1}{2}$ of 14 | $\frac{1}{4}$ of 24 | $\frac{1}{2}$ of 18 |
| 6. $18 \div 3$ | $4\overline{)20}$ | $27 \div 3$ | $4\overline{)24}$ |
| 7. $3\overline{)21}$ | $2\overline{)12}$ | $\frac{1}{2}$ of 12 | $\frac{1}{3}$ of 12 |
| 8. $3\overline{)24}$ | $\frac{1}{2}$ of 6 | $3\overline{)18}$ | $8 \div 4$ |
| 9. $16 \div 2$ | $3\overline{)9}$ | $\frac{1}{2}$ of 8 | $\frac{1}{4}$ of 28 |

➤ **Extra Practice.** Work Set 70.

Dividing a Number by an Equal Number

[O]

1. If 3 girls share 3 dolls equally, how many dolls will each girl have? $\frac{1}{3}$ of 3 = 1, or $\overset{1}{3}\overline{)3}$, or $3 \div 3 = 1$.

Tell the answers for Ex. 2 to 7.

- | | | |
|-------------------|----------------------------------|-----------------|
| 2. $5 \div 5 = ?$ | 3. $\overset{?}{2}\overline{)2}$ | 4. 7's in 7 = ? |
| 5. $4 \div 4 = ?$ | 6. $\overset{?}{6}\overline{)6}$ | 7. 8's in 8 = ? |

When you divide a number by an equal number, the quotient is 1.

Do You Know?

Progress Test 29 [W]

1. Draw a dot picture for three 6's. Write under the picture all the M. and D. facts it shows.

- Does May or July follow June?
- Write a M. example in which you carry a hundred.
- Draw hats to show 12 divided into thirds.
- Check by adding: $3 \times 206 = 618$.

Write "Yes" or "No" to answer these questions:


- Does XI mean 9?
- Does IV mean 4?
- To find how many things in each of the equal parts of a group, can you divide?
- If you divide a group into equal parts, can you use a fraction to name one of the parts?
- $28 \times 26 = 728$. Does $26 \times 28 = 728$?


When to Use Division

The two uses for D. [O]

It is fun to find the two ways division is used:

1. How many groups of 2 are there in 10?

a. Find the answer by using children. Have all the 10 children stand in a row like this: 

Have them move 2 at a time to make pairs like this: 

There are five 2's in 10.

b. You can find the answer by using numbers.

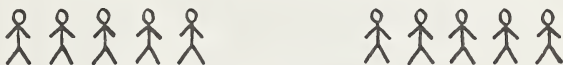
$$2\text{'s in } 10 = ? \quad \text{or} \quad 10 \div 2 = ? \quad \text{or} \quad \begin{array}{r} ? \\ 2 \overline{)10} \end{array}$$

Divide to find how many equal groups.

2. If 10 is divided into 2 equal parts, how many will there be in each part?

a. Find the answer by using 10 children.

Put the same number of children in each part: Have the first pupil walk to the right side of the room, the second pupil to the left side, the third to the right side, and so on until there are two equal groups like this:



When 10 is divided into 2 equal parts, there are 5 in each part.

b. You can find the answer by using numbers.

$$\frac{1}{2} \text{ of } 10 = ? \quad \text{or} \quad 10 \div 2 = ? \quad \text{or} \quad \begin{array}{r} ? \\ 2 \overline{)10} \end{array}$$

Divide to find how many in each of the equal parts.

Oral Problems

Differentiating S., M., and D.

**You can divide to find how many equal groups
or to find how many in each of the equal parts.**

Ex. 1 and 2: Multiply or divide? Why?

1. At 6¢ each, 4 oranges cost $-\text{?}-\text{¢}$.
2. At 6¢ each, 12¢ will buy $-\text{?}-$ oranges.

Ex. 3 and 4: Subtract or divide? Why?

3. I have 8 apples. How many apples can I give to each of 4 boys?
4. I ate 2 of my 8 apples and had $-\text{?}-$ left.

Tell when to subtract, multiply, or divide and tell the example to use in solving the problem.

5. If you use $\frac{1}{2}$ of 16 sheets of paper for each notebook, how many sheets will each notebook have?

6. I made 9 notebooks in all. Jean made 16. I made $-\text{?}-$ fewer notebooks than Jean did.

7. Jack found 2 eggs in each of 3 nests, or $-\text{?}-$ in all.

8. Jack picks up 4 eggs at a time. How many times did he have to reach to pick up 16 eggs?

9. If children sit 2 on a bus seat, $-\text{?}-$ seats will be needed for 10 children.

10. Jack and his brother shared 12 bus tickets equally. Each of the 2 boys got $-\text{?}-$ tickets.

Addition, Subtraction, Multiplication, or Division? Which?

Differentiating A., S., M., and D. [O]



Sharing Things

Ones or tens [O]

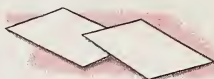
1. In dividing 6 sheets of paper equally, Mary, Joan, and Sue each took a sheet, and then each took another.



Mary's



Joan's

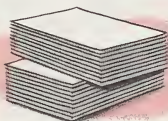


Sue's

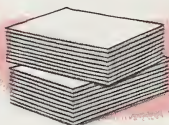
$$\frac{1}{3} \text{ of } 6 \text{ (ones)} = 2 \text{ (ones)} \quad \text{or} \quad \begin{array}{r} 2 \text{ (ones)} \\ 3 \overline{)6 \text{ (ones)}} \end{array}$$

$$\text{or} \quad 6 \text{ (ones)} \div 3 = _? \text{ (ones)}$$

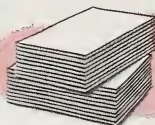
2. In the same way, to divide 6 tens equally, the 3 girls each can take a ten, and then each another ten.



Mary's



Joan's



Sue's

$$\frac{1}{3} \text{ of } 6 \text{ (tens)} = 2 \text{ (tens)} \quad \text{or} \quad \begin{array}{r} 2 \text{ (tens)} \\ 3 \overline{)6 \text{ (tens)}} \end{array}$$

$$\text{or} \quad 6 \text{ (tens)} \div 3 = _? \text{ (tens)}$$

3. If 80 shells are shared equally by 4 girls, each girl will get how many?

$$\frac{1}{4} \text{ of } 80 = ? \quad 80 \text{ is the same as } 8 \text{ tens.}$$

$$8 \text{ tens} \div 4 = 2 \text{ tens.} \quad 80 \div 4 = 2 \text{ tens, or } _? \text{.}$$

Say these examples and their answers:

$$4. \quad \frac{1}{2} \text{ of } 4 \text{ tens} = ? \quad 40 \div 2 = ?$$

$$5. \quad \frac{1}{3} \text{ of } 9 \text{ tens} = ? \quad 90 \div 3 = ?$$

$$6. \quad \frac{1}{4} \text{ of } 8 \text{ tens} = ? \quad 80 \div 4 = ?$$

You divide tens like ones.

Dividing Tens

[O]

Ex. 1 is a way to write, “2 tens \div 2 = 1 ten.” In Ex. 1 does the 0 of 10 keep the 1 in ten’s place?

How were the quotients found in Ex. 2 to 5?

$$1. \begin{array}{r} 10 \\ 2 \overline{)20} \end{array} \quad 2. \begin{array}{r} 30 \\ 3 \overline{)90} \end{array} \quad 3. \begin{array}{r} 20 \\ 2 \overline{)40} \end{array} \quad 4. \begin{array}{r} 10 \\ 4 \overline{)40} \end{array} \quad 5. \begin{array}{r} 20 \\ 3 \overline{)60} \end{array}$$

In Ex. 6 below, the quotient figure is in the wrong place. Explain. How can you make it mean 3 tens?

In Ex. 7 below, should the quotient figure, 4, be in ten’s place? Why or why not?

In Ex. 8 to 13, tell which quotients are wrong, and why.

$$6. \begin{array}{r} 3 \\ 2 \overline{)60} \end{array} \quad 7. \begin{array}{r} 4 \\ 4 \overline{)16} \end{array} \quad 8. \begin{array}{r} 1 \\ 7 \overline{)70} \end{array} \quad 9. \begin{array}{r} 10 \\ 3 \overline{)30} \end{array}$$

$$10. \begin{array}{r} 20 \\ 4 \overline{)80} \end{array} \quad 11. \begin{array}{r} 9 \\ 3 \overline{)27} \end{array} \quad 12. \begin{array}{r} 1 \\ 8 \overline{)80} \end{array} \quad 13. \begin{array}{r} 20 \\ 3 \overline{)60} \end{array}$$

[W]

Copy Ex. 14 to 33 and place quotient figures correctly.

$$14. \begin{array}{r} 8 \\ 8 \overline{)16} \end{array} \quad 15. \begin{array}{r} 2 \\ 2 \overline{)40} \end{array} \quad 16. \begin{array}{r} 4 \\ 4 \overline{)36} \end{array} \quad 17. \begin{array}{r} 2 \\ 2 \overline{)80} \end{array}$$

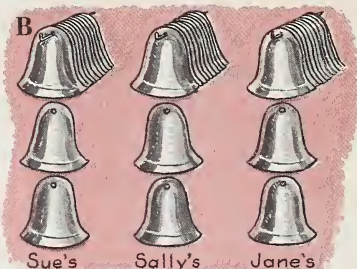
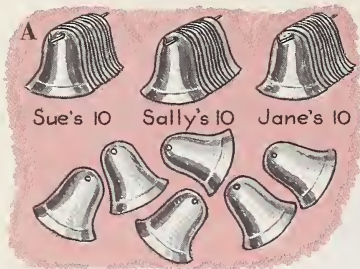
$$18. \begin{array}{r} 4 \\ 4 \overline{)40} \end{array} \quad 19. \begin{array}{r} 9 \\ 9 \overline{)27} \end{array} \quad 20. \begin{array}{r} 2 \\ 2 \overline{)20} \end{array} \quad 21. \begin{array}{r} 4 \\ 4 \overline{)24} \end{array}$$

$$22. \begin{array}{r} 9 \\ 9 \overline{)90} \end{array} \quad 23. \begin{array}{r} 6 \\ 6 \overline{)24} \end{array} \quad 24. \begin{array}{r} 3 \\ 3 \overline{)90} \end{array} \quad 25. \begin{array}{r} 7 \\ 7 \overline{)28} \end{array}$$

$$26. \begin{array}{r} 6 \\ 6 \overline{)60} \end{array} \quad 27. \begin{array}{r} 2 \\ 2 \overline{)16} \end{array} \quad 28. \begin{array}{r} 5 \\ 5 \overline{)40} \end{array} \quad 29. \begin{array}{r} 4 \\ 4 \overline{)32} \end{array}$$

$$30. \begin{array}{r} 5 \\ 5 \overline{)50} \end{array} \quad 31. \begin{array}{r} 4 \\ 4 \overline{)28} \end{array} \quad 32. \begin{array}{r} 8 \\ 8 \overline{)80} \end{array} \quad 33. \begin{array}{r} 5 \\ 5 \overline{)20} \end{array}$$

Place quotient figures correctly.



Dividing Bells and Stars

2-place quotients [O]

1. Pictures A and B show how Sue, Sally, and Jane divided 36 bells into 3 equal groups. First they divided the tens, then they divided the ones. Explain.

Here is another way to find the answer.

$$36 = 30 + 6 \quad \begin{array}{r} 10 + 2, \text{ or } 12 \\ 3 \overline{)30 + 6} \end{array}$$

Box C shows a better way to find $36 \div 3$. Tell what figures are in ten's place; in one's place.

C

| | Tens | Ones | |
|-----|------|------|--------------------|
| | 1 | 2 | |
| 3) | 3 | 6 | |
| - 3 | 0 | 0 | (1 ten \times 3) |
| | 6 | 0 | |
| - 6 | 0 | 0 | (2 \times 3) |

Divide tens: $3 \div 3 = 1$. Write "1" in ten's place in the quotient.

Multiply: $1 \text{ ten} \times 3$ (or $3 \times 1 \text{ ten}$) = 3 tens, or 30. Write "30" under 36 and subtract. That leaves only 6 ones to divide.

Divide ones: $6 \div 3 = 2$. Write "2" in one's place in the quotient.

Multiply: $2 \text{ ones} \times 3 = 6 \text{ ones}$. Write "6" under 6 and subtract.

The remainder, 0, shows that 36 bells will make 3 equal groups of 12. There are no more bells to divide.

2. Sue and Sally each put $\frac{1}{2}$ of 64 gold stars on a card, as at the right. How many stars were on each card?

$$\frac{1}{2} \text{ of } 64 = ? \quad 64 \div 2 = ?$$

Box D shows the work with figures. In box D, how do you get 3 in the quotient? In what place is it written? Does 3 in ten's place mean 30?

For box D, do the work this way.

Tens: *Think, "6 \div 2 = 3."* Write "3" in ten's place in the quotient. Multiply: 3 tens \times 2 = 6 tens, or 60. Write "60" under 64 and subtract.

Ones: *Think, "4 \div 2 = 2."* Write "2" in one's place in the quotient. Multiply: 2 ones \times 2 = 4 ones. Write "4" under 4 and subtract. $4 - 4 = 0$.



| D | E | F | G |
|---|---|--|--|
| $\begin{array}{r} 32 \\ 2 \overline{)64} \\ \underline{-60} \text{ (3 tens } \times 2) \\ 4 \\ \underline{-4} \text{ (? } \times \text{ ?)} \\ 0 \end{array}$ | $\begin{array}{r} 3? \\ 3 \overline{)96} \\ \underline{-90} \text{ (3 tens } \times 3) \\ 6 \\ \underline{-6} \text{ (? } \times \text{ ?)} \\ 0 \end{array}$ | $\begin{array}{r} ?? \\ 2 \overline{)68} \\ \underline{-60} \text{ (? } \times \text{ ?)} \\ 8 \\ \underline{-8} \text{ (? } \times \text{ ?)} \\ 0 \end{array}$ | $\begin{array}{r} ?? \\ 4 \overline{)88} \\ \underline{-80} \text{ (? } \times \text{ ?)} \\ 8 \\ \underline{-8} \text{ (? } \times \text{ ?)} \\ 0 \end{array}$ |

As in Ex. 2, explain the work in boxes E to G.

Dividing 2-Place Numbers

2-place quotients [W]

Copy, divide, and check by doing a second time.

| a | b | c | d | e | f |
|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| 1. $3\overline{)39}$ | $2\overline{)66}$ | $4\overline{)44}$ | $3\overline{)63}$ | $2\overline{)26}$ | $2\overline{)42}$ |
| 2. $4\overline{)88}$ | $2\overline{)84}$ | $2\overline{)88}$ | $3\overline{)33}$ | $2\overline{)68}$ | $3\overline{)93}$ |
| 3. $6\overline{)66}$ | $2\overline{)86}$ | $3\overline{)69}$ | $2\overline{)24}$ | $8\overline{)88}$ | $2\overline{)82}$ |
| 4. $3\overline{)96}$ | $2\overline{)46}$ | $3\overline{)36}$ | $2\overline{)64}$ | $4\overline{)48}$ | $2\overline{)28}$ |

➤ **Extra Practice.** Work Set 71.

Getting Ready for May Day

Dividing 3-place numbers [O]

For our May Day party, we want to put 128 people at 4 tables with the same number at each table. How many will be at each table? $128 \div 4 = ?$

$128 = 1$ hundred and 2 tens and 8 ones.

Divide hundreds: Look at 1 hundred.

Think, “There are not enough hundreds to have even 1 hundred at a table. But we can divide tens since $128 = 12$ tens and 8 ones.”

Divide tens: *Think,* “ $12 \div 4 = 3$.”

Write “3” in ten’s place.

| A | Hundreds | Tens | Ones |
|------------------|----------|------|------|
| | | 3 | 2 |
| $4\overline{)1}$ | 2 | 8 | |
| | 1 | 2 | 0 |
| | | | 8 |
| | | | 8 |
| | | | 0 |

Now finish telling about the work in box A.

Explain the first quotient figure in each of Ex. 1 to 5.

| | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 1. $2\overline{)182}$ | 2. $3\overline{)249}$ | 3. $4\overline{)128}$ | 4. $7\overline{)287}$ | 5. $2\overline{)106}$ |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|

Think of the division in box B as meaning there are three groups of 51 in 153. If 51 is the correct quotient, then 3×51 will equal 153. This is a way to check division. Box C shows that 3×51 equals 153, so 51 is the correct quotient.

To check division, multiply the quotient and the number you divided by. The product should be the same as the number you divided.

| | |
|----------|--|
| B | $\begin{array}{r} 51 \\ 3 \overline{)153} \\ \underline{150} \\ 3 \\ \underline{3} \\ 0 \end{array}$ |
| C | <p>Check</p> $\begin{array}{r} 51 \\ \times 3 \\ \hline 153 \end{array}$ |

[W]

Check, as in box C: 6. $155 \div 5 = 31$ 7. $328 \div 4 = 83$

Divide as in box B. The quotient is shown for Ex. 8a. Why is 0 put at the left of the cent point?

| a | b | c | d | e |
|-----------------------------|-------------------------|----------------------|----------------------|----------------------|
| \$0.71 | | | | |
| 8. $3 \overline{) \$2.13}$ | $2 \overline{) \$1.44}$ | $3 \overline{) 276}$ | $2 \overline{) 166}$ | $2 \overline{) 122}$ |
| 9. $6 \overline{) \$1.26}$ | $5 \overline{) \$2.05}$ | $2 \overline{) 128}$ | $3 \overline{) 243}$ | $2 \overline{) 188}$ |
| 10. $2 \overline{) \$1.48}$ | $3 \overline{) \$1.83}$ | $3 \overline{) 249}$ | $2 \overline{) 106}$ | $4 \overline{) 48}$ |
| 11. $2 \overline{) \$1.64}$ | $9 \overline{) \$3.69}$ | $3 \overline{) 186}$ | $3 \overline{) 156}$ | $7 \overline{) 287}$ |
| 12. $3 \overline{) \$2.79}$ | $4 \overline{) \$0.84}$ | $3 \overline{) 219}$ | $4 \overline{) 124}$ | $6 \overline{) 246}$ |
| 13. $8 \overline{) \$2.48}$ | $7 \overline{) \$2.17}$ | $2 \overline{) 124}$ | $5 \overline{) 105}$ | $9 \overline{) 189}$ |

Check the examples in rows 12 and 13, as in box C.

► **Extra Practice.** Work Sets 72 and 73.

Does Your Answer Look Right?

Products and quotients [O]

In Ex. A, the product 32 is larger than 8, the number

| | |
|---|--|
| A | B |
| $\begin{array}{r} 8 \\ \times 4 \\ \hline 32 \end{array}$ | $\begin{array}{r} 8 \\ 4 \overline{)32} \end{array}$ |

you are multiplying. When would the product be equal to the number you multiply?

In Ex. B, the quotient 8 is smaller than 32, the number you are dividing. When would the quotient be equal to the number you divide?

A product is almost always larger than the number you are multiplying.

A quotient is almost always smaller than the number you are dividing.

Just by looking, find the answer after each problem which must be wrong. Tell why it is wrong.

1. It took May 28 minutes to read a story. It took Joe 3 times as long, or $_?$ minutes. **25 84**

2. In two months Ann read $\frac{1}{3}$ of her 18 new books. She read $_?$ books. **35 6**

3. May's necklace has 140 beads. To make 4 such necklaces would take $_?$ beads. **560 32**

4. 3×256 **86 768**

9. $324 \div 4$ **81 573**

5. $287 \div 7$ **306 41**

10. 398×2 **212 796**

6. 429×2 **136 858**

11. $168 \div 8$ **21 876**

7. $105 \div 5$ **205 21**

12. 249×3 **83 747**

8. 8×104 **832 102**

13. $164 \div 4$ **41 704**

[W]

Now work Ex. 1 to 13.

Problems about School

Finishing D. problems [W]

Write good questions to make division problems.

1. Miss Wells gave Kay a box of 96 crayons and told her to give the children 3 crayons each.

2. On a page in our book are 48 examples. Miss Wells asked us to work $\frac{1}{2}$ of them.

3. For our play we need 124 extra chairs. We will set them out in rows of 4.

4. Our reading book has 186 pages. Miss Wells said, "We have $\frac{1}{3}$ of the book to finish."

5. One month, our class had 128 new spelling words. Joan wrote them in 4 equal columns.

6. There are 205 children in the school building. 5 children make a basketball team.



1. $153 \div 3$

2. $701 - 572$

A., S., M., D. [W]

3. $219 \div 3$

4. 31×9

5. $769 + 146$

6. $128 \div 4$

7. $500 - 489$

8. 43×8

9. $168 \div 2$

10. $186 \div 2$

11. $64 \div 2$

12. $932 - 434$

13. $189 \div 3$

14. $59 + 375$

15. $155 \div 5$

16. $19 + 8 + 7 + 9 + 5$

17. $543 + 89 + 97 + 6$

18. $6 + 8 + 4 + 7 + 8$

19. $35 + 275 + 88 + 269$

20. $3 + 9 + 8 + 7 + 5$

21. $7¢ + 8¢ + 8¢ + 9¢$

(three hundred twenty-three) **323**

Right or Wrong? Prove It!

[O]

Tell what is wrong in Ex. 1 to 5.

1. Joe takes the slow train because the slow train gets him there in $\frac{1}{2}$ the time of the fast train.

2. A farmer sold 40 quart bottles of milk and 50 pint bottles of milk. He sold more milk in pint bottles than in quart bottles.

3. Bob's way to subtract 285 from 400 is to do nothing with 0, because 0 means "nothing."

4. Mrs. Burns bought 6 yards of milk.

5. After giving away more than $\frac{1}{2}$ of her 6 pieces of candy, Ann has 3 pieces left.

Practice in Multiplication and Division

[W]

For a check, do each example a second time.

- | | | |
|--------------------|--------------------|--------------------|
| 1. $69 \div 3$ | 11. $279 \div 9$ | 21. 34×8 |
| 2. 8×21 | 12. $217 \div 7$ | 22. $243 \div 3$ |
| 3. $205 \div 5$ | 13. 8×104 | 23. $328 \div 8$ |
| 4. 3×321 | 14. $106 \div 2$ | 24. 7×113 |
| 5. $369 \div 9$ | 15. $189 \div 9$ | 25. $124 \div 2$ |
| 6. $168 \div 8$ | 16. 43×7 | 26. $186 \div 6$ |
| 7. 23×4 | 17. $126 \div 3$ | 27. 44×5 |
| 8. 112×6 | 18. $105 \div 5$ | 28. 104×9 |
| 9. $82 \div 2$ | 19. 32×6 | 29. $99 \div 3$ |
| 10. 2×435 | 20. $128 \div 2$ | 30. $147 \div 7$ |

Now turn around Ex. 1 to 10. For Ex. 1, you write "69 \div 3 = 23, so 23 = 69 \div 3."



Can You Solve Problems?

Problem Test 8

Do the work for Ex. 1 to 9.

1. If each basket of apples above weighs 45 pounds, the 4 baskets of apples will weigh how many pounds?

2. Tom weighs 59 pounds. His father weighs 3 times as much. How many pounds does Tom's father weigh?

3. Tom's uncle weighs 176 pounds. He weighs how many pounds less than 200 pounds?

4. Four boys working together earned \$2.44. How much was each boy's share?

5. The girls had \$3.75 and wanted to buy a game that cost \$4.50. How much more must they earn?

6. At \$1.35 each, how much will four books cost?

7. May spent \$1.53 for 3 presents, all alike. How much did each present cost?

8. Mike reads 8 pages a day. How many days will it take him to read a book of 248 pages?

9. Mrs. Burns spent these amounts of money at three stores, \$2.75, \$1.68, and \$3.39. Altogether, how much did she spend?

Check your work to see if you made mistakes.

Do You Understand?

Test of Information and Meaning 8

1. Write the other facts in the whole story.

a. $36 \div 4$ b. $27 \div 9$ c. $16 \div 8$ d. $24 \div 3$

2. In which example do you carry tens and hundreds?

113×3 6×134 4×242 327×2



3. Write the whole story in M. and D. shown in this dot picture.

4. Check this division by subtracting:

$$18 \div 6 = 3.$$

5. Draw 12 circles. Put a dot in $\frac{1}{4}$ of them.

6. Write an example in which you divide tens.

7. From the box at the right, copy the two columns. See if you know what these measures mean. On your paper draw lines between things that are equal.

| | |
|--------------|----------|
| 4 quarts | 1 pint |
| 2 pints | 1 gallon |
| 2 half-pints | 1 quart |

Write on your paper the missing words and numbers.

8. The Roman numeral for 10 is _?_.

9. To check division, you _?_ the quotient and the number you divide by.

10. In 734, the 7 is in _?_ place.

11. Write a division fact which has only 2 parts in its whole story.

12. In multiplying, you carry hundreds when the product in _?_ place is 10 or more.

Do You Make Mistakes?

Diagnostic Test 8

Copy the examples. Work and check if you can.

| | a | b | c | d | Study Pages | Practice Sets |
|----|-----------------------|---------------------|-----------------------|---------------------|--------------|---------------|
| 1. | $8\overline{)32}$ | $4\overline{)36}$ | 7×4 | 4×6 | 298, 304 | 67, 69 |
| 2. | $\frac{1}{3}$ of 18 | $\frac{1}{4}$ of 28 | $\frac{1}{3}$ of 24 | $\frac{1}{2}$ of 14 | 309 | 70 |
| 3. | $3\overline{)\$0.93}$ | $4\overline{)84}$ | $4\overline{)\$3.64}$ | $5\overline{)205}$ | 318, 320-321 | 71, 72, 73 |

How Well Can You Figure?

Computation Test 8

Copy and work.

1. $\$0.43$
 $\times 8$

2. 4
 $\times 219$

3. $\$9.23$
 $- 7.48$

4. 900
 $- 760$

5. $4\overline{)\$1.24}$

6. $\$0.34$
 $\times 5$

7. $3\overline{)\$1.86}$

8. $8\overline{)328}$

9. $\$6.57$
 $- 5.43$

10. $\$5.72$
 $+ 3.78$

11. 706
 $- 158$

12. $\$2.58$
 $\times 3$

13. $6\overline{)246}$

14. $7\overline{)\$1.47}$

15. $\$0.98$
 $\times 4$

16. 483
 $+ 77$

17. $6 + 8 + 9 + 7 + 8$

18. $135 + 473 + 99$

19. $47 + 7 + 8 + 9 + 6$

20. $\$5.00 + \$0.73 + \$3.49$

(three hundred twenty-seven) 327

Extra Practice

| | | | | | | | | | |
|----------|-------------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------|------------------|
| Set 1 | a | b | c | d | e | f | g | h | i |
| | 1. 2 <u>+7</u> | 3 <u>+6</u> | 3 <u>+4</u> | 6 <u>+4</u> | 2 <u>+6</u> | 2 <u>+4</u> | 5 <u>+5</u> | 4¢ <u>+3¢</u> | 5¢ <u>+4¢</u> |
| | 2. 7 <u>+3</u> | 4 <u>+4</u> | 6 <u>+3</u> | 4 <u>+5</u> | 7 <u>+2</u> | 3 <u>+5</u> | 8 <u>+2</u> | 5¢ <u>+3¢</u> | 2¢ <u>+5¢</u> |
| Set 2 | 1. 4 <u>+6</u> | 6 <u>+2</u> | 4 <u>+2</u> | 3 <u>+7</u> | 2 <u>+8</u> | 5 <u>+2</u> | 3 <u>+3</u> | 8¢ <u>+1¢</u> | 2¢ <u>+3¢</u> |
| | 2. 1 <u>+9</u> | 5 <u>+1</u> | 1 <u>+6</u> | 7 <u>+1</u> | 3 <u>+2</u> | 1 <u>+7</u> | 9 <u>+1</u> | 2¢ <u>+2¢</u> | 4¢ <u>+1¢</u> |
| Set 3 | a | b | | c | | | | | |
| | 1. 5 + 1 + 2 | 1 + 3 + 3 | | 1¢ + 7¢ + 2¢ | | | | | |
| | 2. 2 + 5 + 2 | 3 + 1 + 2 | | 3¢ + 2¢ + 2¢ | | | | | |
| | 3. 1 + 6 + 3 | 1 + 4 + 4 | | 1¢ + 8¢ + 1¢ | | | | | |
| | 4. 2 + 7 + 1 | 2 + 3 + 3 | | 3¢ + 4¢ + 1¢ | | | | | |
| Set 4 | 1. 6 + 1 + 3 | 5 + 2 + 3 | | 5¢ + 4¢ + 1¢ | | | | | |
| | 2. 4 + 3 + 2 | 6 + 2 + 2 | | 2¢ + 2¢ + 5¢ | | | | | |
| | 3. 1 + 7 + 1 | 4 + 2 + 2 | | 2¢ + 3¢ + 2¢ | | | | | |
| | 4. 4 + 3 + 1 | 6 + 2 + 1 | | 2¢ + 1¢ + 4¢ | | | | | |
| Set 5 | a | b | c | d | e | f | g | h | i |
| | 1. 2 <u>+1</u> | 4 <u>+2</u> | 4 <u>+1</u> | 4 <u>+4</u> | 2 <u>+5</u> | 3 <u>+2</u> | 1 <u>+1</u> | 3¢ <u>+2¢</u> | 2¢ <u>+6¢</u> |
| | 6 <u>+1</u> | 1 <u>+2</u> | 3 <u>+1</u> | 2 <u>+4</u> | 2 <u>+5</u> | 4 <u>+2</u> | 5 <u>+1</u> | 5¢ <u>+2¢</u> | 1¢ <u>+6¢</u> |
| | 2. 2 <u>+2</u> | 3 <u>+6</u> | 2 <u>+5</u> | 6 <u>+3</u> | 1 <u>+3</u> | 4 <u>+4</u> | 6 <u>+1</u> | 4¢ <u>+1¢</u> | 3¢ <u>+3¢</u> |
| | 4 <u>+2</u> | 1 <u>+6</u> | 3 <u>+5</u> | 1 <u>+3</u> | 2 <u>+3</u> | 1 <u>+4</u> | 3 <u>+1</u> | 4¢ <u>+1¢</u> | 2¢ <u>+3¢</u> |

| | | | | | | | | | |
|-----------|--------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------|-------------------|
| Set 6 | a | b | c | d | e | f | g | h | i |
| | 1. 8 <u>-4</u> | 5 <u>-3</u> | 7 <u>-3</u> | 9 <u>-7</u> | 8 <u>-6</u> | 10 <u>-3</u> | 9 <u>-4</u> | 10¢ <u>-2¢</u> | 10¢ <u>-7¢</u> |
| Set 7 | 2. 9 <u>-5</u> | 7 <u>-2</u> | 8 <u>-2</u> | 9 <u>-3</u> | 6 <u>-4</u> | 8 <u>-5</u> | 7 <u>-4</u> | 10¢ <u>-6¢</u> | 10¢ <u>-8¢</u> |
| | 1. 10 <u>-4</u> | 9 <u>-6</u> | 8 <u>-3</u> | 7 <u>-5</u> | 6 <u>-3</u> | 10 <u>-5</u> | 10 <u>-1</u> | 4¢ <u>-2¢</u> | 9¢ <u>-2¢</u> |
| Set 8 | 2. 5 <u>-2</u> | 7 <u>-1</u> | 10 <u>-9</u> | 6 <u>-2</u> | 8 <u>-7</u> | 9 <u>-1</u> | 7 <u>-6</u> | 4¢ <u>-3¢</u> | 9¢ <u>-8¢</u> |
| | 1. 3 <u>+3</u> | 5 <u>+2</u> | 6 <u>-5</u> | 8 <u>-5</u> | 6 <u>-2</u> | 3 <u>+7</u> | 2 <u>+3</u> | 6¢ <u>-3¢</u> | 10¢ <u>-4¢</u> |
| Set 9 | 2. 2 <u>+8</u> | 7 <u>-5</u> | 9 <u>-6</u> | 4 <u>+6</u> | 9 <u>-2</u> | 10 <u>-5</u> | 4 <u>+2</u> | 10¢ <u>-9¢</u> | 6¢ <u>+2¢</u> |
| | 1. 11 <u>+5</u> | 25 <u>+3</u> | 72 <u>+5</u> | 13 <u>+3</u> | 66 <u>+2</u> | 21 <u>+2</u> | 13 <u>+6</u> | 47 <u>+2</u> | |
| Set 10 | 2. 15 <u>+4</u> | 42 <u>+7</u> | 83 <u>+4</u> | 46 <u>+3</u> | 64 <u>+2</u> | 92 <u>+4</u> | 85 <u>+2</u> | 74 <u>+4</u> | |
| | 1. 11 <u>+7</u> | 52 <u>+6</u> | 42 <u>+3</u> | 98 <u>+1</u> | 73 <u>+6</u> | 64 <u>+5</u> | 54 <u>+4</u> | 21 <u>+8</u> | |
| | 2. 82 <u>+5</u> | 71 <u>+4</u> | 34 <u>+3</u> | 41 <u>+6</u> | 43 <u>+2</u> | 75 <u>+4</u> | 62 <u>+2</u> | 33 <u>+5</u> | |

| | a | b | c | d | e | f | g | h |
|--------|-----------|-----------|-----------|------------|-----------|-----------|------------|------------|
| Set 11 | 1. 44 | 35 | 23 | 53 | 91 | 12 | 71 | 11 |
| | 2 | 1 | 1 | 3 | 5 | 4 | 6 | 3 |
| | <u>+2</u> | <u>+2</u> | <u>+5</u> | <u>+3</u> | <u>+1</u> | <u>+3</u> | <u>+1</u> | <u>+4</u> |
| | 2. 12 | 23 | 44 | 23 | 61 | 22 | 34 | 42 |
| | 3 | 2 | 1 | 1 | 1 | 1 | 3 | 6 |
| | <u>+3</u> | <u>+4</u> | <u>+1</u> | <u>+3</u> | <u>+5</u> | <u>+3</u> | <u>+1</u> | <u>+1</u> |
| Set 12 | 1. 31 | 25 | 63 | 54 | 52 | 81 | 22 | 46 |
| | 3 | 3 | 2 | 2 | 5 | 3 | 3 | 2 |
| | <u>+4</u> | <u>+1</u> | <u>+2</u> | <u>+3</u> | <u>+2</u> | <u>+5</u> | <u>+4</u> | <u>+1</u> |
| | 2. 33 | 65 | 42 | 51 | 24 | 26 | 73 | 14 |
| | 1 | 2 | 3 | 7 | 4 | 1 | 4 | 2 |
| | <u>+2</u> | <u>+2</u> | <u>+2</u> | <u>+1</u> | <u>+1</u> | <u>+1</u> | <u>+2</u> | <u>+2</u> |
| Set 13 | 1. 18 | 19 | 29 | 38 | 27 | 45 | 76 | 59¢ |
| | <u>-3</u> | <u>-7</u> | <u>-4</u> | <u>-5</u> | <u>-3</u> | <u>-4</u> | <u>-3</u> | <u>-3¢</u> |
| | 2. 68 | 77 | 25 | 56 | 95 | 67 | 38 | 29¢ |
| | <u>-2</u> | <u>-5</u> | <u>-2</u> | <u>-4</u> | <u>-3</u> | <u>-4</u> | <u>-6</u> | <u>-2¢</u> |
| | 1. 86 | 78 | 59 | 87 | 84 | 69 | 34 | 86¢ |
| | <u>-2</u> | <u>-4</u> | <u>-5</u> | <u>-2</u> | <u>-3</u> | <u>-6</u> | <u>-2</u> | <u>-5¢</u> |
| Set 14 | 2. 77 | 58 | 89 | 73 | 77 | 45 | 34 | 29¢ |
| | <u>-1</u> | <u>-7</u> | <u>-8</u> | <u>-1</u> | <u>-6</u> | <u>-1</u> | <u>-1</u> | <u>-1¢</u> |
| Set 15 | 1. 64 | 19 | 42 | 2 | 26 | 49 | 5 | 75 |
| | <u>+5</u> | <u>-5</u> | <u>+2</u> | <u>+16</u> | <u>-4</u> | <u>-3</u> | <u>+33</u> | <u>+4</u> |
| | 2. 46 | 48 | 45 | 87 | 39 | 22 | 15 | 83 |
| | <u>+3</u> | <u>-6</u> | <u>+2</u> | <u>+2</u> | <u>-5</u> | <u>+6</u> | <u>-2</u> | <u>+4</u> |

| | | | | | | | | | | |
|-----------|----|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Set 16 | | a | b | c | d | e | f | g | h | i |
| | 1. | 8 | 12 | 6 | 7 | 12 | 9 | 11 | 5¢ | 12¢ |
| | | <u>+4</u> | <u>-9</u> | <u>+5</u> | <u>+4</u> | <u>-7</u> | <u>+3</u> | <u>-6</u> | <u>+7¢</u> | <u>-6¢</u> |
| | 2. | 12 | 12 | 3 | 11 | 11 | 4 | 9 | 3¢ | 12¢ |
| | | <u>-5</u> | <u>-8</u> | <u>+9</u> | <u>-8</u> | <u>-4</u> | <u>+8</u> | <u>+2</u> | <u>+8¢</u> | <u>-3¢</u> |
| Set 17 | 1. | 6 | 4 | 5 | 7 | 5 | 8 | 5 | 4 | 2 |
| | | 6 | 9 | 9 | 7 | 6 | 4 | 7 | 7 | 8 |
| | | <u>+7</u> | <u>+6</u> | <u>+3</u> | <u>+5</u> | <u>+6</u> | <u>+6</u> | <u>+3</u> | <u>+8</u> | <u>+5</u> |
| | 2. | 2 | 7 | 5 | 3 | 4 | 6 | 9 | 3 | 6 |
| | | 9 | 5 | 8 | 9 | 8 | 5 | 2 | 8 | 8 |
| | | <u>+7</u> | <u>+5</u> | <u>+5</u> | <u>+4</u> | <u>+2</u> | <u>+5</u> | <u>+4</u> | <u>+2</u> | <u>+3</u> |
| Set 18 | 1. | 80 | 4 | 9 | 20 | 10 | 40 | 80 | 60 | 10 |
| | | <u>+2</u> | <u>+70</u> | <u>+50</u> | <u>+5</u> | <u>+6</u> | <u>+5</u> | <u>+9</u> | <u>+7</u> | <u>+7</u> |
| | 2. | 6 | 7 | 0 | 9 | 35 | 23 | 40 | 84 | 60 |
| | | 0 | 6 | 6 | 0 | 0 | 2 | 7 | 0 | 6 |
| | | <u>+8</u> | <u>+0</u> | <u>+5</u> | <u>+5</u> | <u>+2</u> | <u>+0</u> | <u>+2</u> | <u>+5</u> | <u>+3</u> |
| Set 19 | | a | b | c | d | e | f | g | h | |
| | 1. | 25 | 56 | 20 | 24 | 30 | 61 | 73 | 20 | |
| | | <u>+30</u> | <u>+23</u> | <u>+14</u> | <u>+51</u> | <u>+10</u> | <u>+20</u> | <u>+10</u> | <u>+29</u> | |
| | 2. | 54 | 10 | 46 | 23 | 70 | 17 | 40 | 13 | |
| | | <u>+14</u> | <u>+15</u> | <u>+31</u> | <u>+72</u> | <u>+22</u> | <u>+40</u> | <u>+21</u> | <u>+73</u> | |
| Set 20 | 1. | 76 | 52 | 41 | 54 | 67 | 18 | 20 | 43 | |
| | | <u>+20</u> | <u>+32</u> | <u>+34</u> | <u>+25</u> | <u>+22</u> | <u>+81</u> | <u>+78</u> | <u>+55</u> | |
| | 2. | 23 | 43 | 54 | 81 | 55 | 13 | 30 | 37 | |
| | | <u>+66</u> | <u>+34</u> | <u>+42</u> | <u>+11</u> | <u>+34</u> | <u>+21</u> | <u>+27</u> | <u>+61</u> | |

| | a | b | c | d | e | f | g | h | i |
|--------|------------|------------|------------|------------|------------|------------|------------|-------------|------------|
| Set 21 | 1. 50 | 60 | 80 | 19 | 94 | 23 | 47 | 53 | 32 |
| | <u>-20</u> | <u>-50</u> | <u>-30</u> | <u>-10</u> | <u>-34</u> | <u>-20</u> | <u>-17</u> | <u>-23</u> | <u>-12</u> |
| | 2. 84 | 53 | 47 | 65 | 88 | 78 | 36 | 95 | 29 |
| | <u>-50</u> | <u>-23</u> | <u>-30</u> | <u>-25</u> | <u>-8</u> | <u>-40</u> | <u>-16</u> | <u>-20</u> | <u>-9</u> |
| Set 22 | 1. 85 | 37 | 85 | 68 | 95 | 87 | 99 | 89 | 37 |
| | <u>-61</u> | <u>-25</u> | <u>-14</u> | <u>-18</u> | <u>-42</u> | <u>-86</u> | <u>-25</u> | <u>-53</u> | <u>-33</u> |
| | 2. 74 | 78 | 83 | 39 | 68 | 94 | 28 | 67 | 67 |
| | <u>-22</u> | <u>-14</u> | <u>-30</u> | <u>-12</u> | <u>-62</u> | <u>-84</u> | <u>-25</u> | <u>-40</u> | <u>-37</u> |
| Set 23 | 1. 43 | 48 | 79 | 91 | 20 | 66 | 69 | 46 | 47 |
| | <u>-21</u> | <u>-33</u> | <u>-44</u> | <u>-81</u> | <u>-10</u> | <u>-33</u> | <u>-46</u> | <u>-16</u> | <u>-44</u> |
| | 2. 68 | 54 | 67 | 86 | 78 | 85 | 94 | 82 | 39 |
| | <u>-41</u> | <u>-33</u> | <u>-52</u> | <u>-24</u> | <u>-26</u> | <u>-35</u> | <u>-20</u> | <u>-21</u> | <u>-27</u> |
| Set 24 | 1. 42 | 65 | 18 | 54 | 68 | 76 | 33 | 95¢ | 24 |
| | <u>+50</u> | <u>-25</u> | <u>+50</u> | <u>+30</u> | <u>-37</u> | <u>-60</u> | <u>+45</u> | <u>-80¢</u> | <u>+45</u> |
| | 2. 10 | 51 | 72 | 28 | 94 | 69 | 99 | 35¢ | 87 |
| | <u>+36</u> | <u>+43</u> | <u>-42</u> | <u>+41</u> | <u>-64</u> | <u>-36</u> | <u>-40</u> | <u>+3¢</u> | <u>-23</u> |
| Set 25 | 1. 3 | 2 | 5 | 6 | 2 | 53 | 84 | 70 | 41 |
| | 1 | 4 | 4 | 1 | 8 | 2 | 0 | 5 | 6 |
| | 4 | 3 | 2 | 2 | 5 | 0 | 3 | 2 | 0 |
| | <u>+1</u> | <u>+5</u> | <u>+6</u> | <u>+6</u> | <u>+4</u> | <u>+3</u> | <u>+2</u> | <u>+1</u> | <u>+2</u> |
| | 2. 4 | 3 | 2 | 1 | 5 | 60 | 91 | 32 | 22 |
| | 2 | 4 | 5 | 6 | 0 | 4 | 5 | 4 | 3 |
| | 0 | 3 | 0 | 4 | 6 | 3 | 0 | 3 | 2 |
| | <u>+9</u> | <u>+2</u> | <u>+8</u> | <u>+4</u> | <u>+7</u> | <u>+2</u> | <u>+3</u> | <u>+0</u> | <u>+1</u> |

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|-----------|-----------|------------|------------|------------|-----------|-----------|------------|------------|-----------|
| Set 26 | a | b | c | d | e | f | g | h | i |
| | 1. 2 | 5 | 4 | 6 | 3 | 7 | 61 | 53 | 34 |
| | 4 | 4 | 5 | 5 | 5 | 2 | 3 | 4 | 4 |
| | 1 | 3 | 2 | 1 | 8 | 3 | 2 | 0 | 1 |
| | <u>+2</u> | <u>+6</u> | <u>+3</u> | <u>+0</u> | <u>+1</u> | <u>+5</u> | <u>+3</u> | <u>+2</u> | <u>+0</u> |
| Set 27 | 2. 22 | 4 | 6 | 8 | 44 | 50 | 81 | 42 | 20 |
| | 3 | 6 | 3 | 2 | 2 | 5 | 2 | 4 | 3 |
| | 3 | 8 | 2 | 5 | 3 | 2 | 4 | 2 | 6 |
| | <u>+1</u> | <u>+0</u> | <u>+5</u> | <u>+2</u> | <u>+0</u> | <u>+2</u> | <u>+2</u> | <u>+1</u> | <u>+0</u> |
| | | | | | | | | | |
| Set 28 | a | b | c | d | e | f | g | h | |
| | 1. 64 | 36 | 8 | 58 | 49 | 53 | 37 | 24 | |
| | <u>+7</u> | <u>+8</u> | <u>+47</u> | <u>+3</u> | <u>+7</u> | <u>+9</u> | <u>+4</u> | <u>+9</u> | |
| | 2. 61 | 5 | 7 | 8 | 37 | 15 | 87 | 16 | |
| | <u>+9</u> | <u>+25</u> | <u>+35</u> | <u>+12</u> | <u>+8</u> | <u>+8</u> | <u>+3</u> | <u>+9</u> | |
| Set 29 | 1. 49 | 55 | 79 | 64 | 47 | 68 | 52 | 77 | |
| | <u>+2</u> | <u>+9</u> | <u>+9</u> | <u>+8</u> | <u>+7</u> | <u>+8</u> | <u>+9</u> | <u>+6</u> | |
| | 2. 83 | 57 | 48 | 52 | 34 | 66 | 29 | 88 | |
| | <u>+8</u> | <u>+9</u> | <u>+9</u> | <u>+8</u> | <u>+6</u> | <u>+7</u> | <u>+8</u> | <u>+6</u> | |
| | | | | | | | | | |
| Set 29 | 1. 3 | 8 | 9 | 4 | 6 | 5 | 7¢ | 2¢ | |
| | 7 | 4 | 5 | 9 | 7 | 8 | 9¢ | 9¢ | |
| | <u>+9</u> | <u>+9</u> | <u>+8</u> | <u>+8</u> | <u>+9</u> | <u>+7</u> | <u>+8¢</u> | <u>+9¢</u> | |
| | 2. 2 | 6 | 4 | 9 | 8 | 3 | 7¢ | 5¢ | |
| | 8 | 9 | 7 | 8 | 5 | 8 | 7¢ | 7¢ | |
| | 5 | 5 | 8 | 8 | 7 | 8 | 9¢ | 8¢ | |
| | <u>+5</u> | <u>+6</u> | <u>+4</u> | <u>+7</u> | <u>+4</u> | <u>+6</u> | <u>+5¢</u> | <u>+6¢</u> | |
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| | a | b | c | d | e | f | g | h |
|--------|---------------------|------------------|------------------|------------------|------------------|--------------------|--------------------|------------------------|
| Set 30 | 1. 53 <u>+26</u> | 96 <u>-20</u> | 45 <u>-33</u> | 74 <u>+4</u> | 97 <u>-30</u> | 57 <u>+4</u> | 98 <u>-12</u> | 47 <u>+22</u> |
| | 2. 57 <u>+22</u> | 98 <u>-75</u> | 69 <u>-58</u> | 65 <u>+8</u> | 35 <u>+43</u> | 45 <u>+7</u> | 78 <u>-10</u> | 99 <u>-95</u> |
| Set 31 | 1. 19 <u>+65</u> | 26 <u>+49</u> | 17 <u>+46</u> | 27 <u>+39</u> | 37 <u>+53</u> | 27¢ <u>+25¢</u> | 49¢ <u>+37¢</u> | \$0.39 <u>+0.29</u> |
| | 2. 28 <u>+69</u> | 45 <u>+47</u> | 79 <u>+13</u> | 58 <u>+16</u> | 39 <u>+46</u> | 18¢ <u>+74¢</u> | 49¢ <u>+14¢</u> | \$0.19 <u>+0.28</u> |
| Set 32 | 1. 19 <u>+52</u> | 58 <u>+22</u> | 18 <u>+0</u> | 16 <u>+6</u> | 54 <u>+3</u> | 63 <u>+2</u> | 18 <u>+50</u> | 41 <u>+30</u> |
| | 2. 30 <u>+34</u> | 37 <u>+14</u> | 58 <u>+33</u> | 67 <u>+27</u> | 31 <u>+28</u> | 46 <u>+28</u> | 28 <u>+55</u> | 18 <u>+28</u> |
| Set 33 | 1. 35 <u>-8</u> | 50 <u>-8</u> | 57 <u>-9</u> | 41 <u>-4</u> | 82 <u>-8</u> | 90 <u>-3</u> | 41¢ <u>-7¢</u> | \$0.27 <u>-0.08</u> |
| | 2. 63 <u>-9</u> | 32 <u>-6</u> | 31 <u>-5</u> | 55 <u>-6</u> | 22 <u>-5</u> | 21 <u>-6</u> | 60¢ <u>-9¢</u> | \$0.33 <u>-0.08</u> |
| Set 34 | 1. 44 <u>-8</u> | 48 <u>-9</u> | 63 <u>-6</u> | 32 <u>-7</u> | 81 <u>-9</u> | 33 <u>-7</u> | 86¢ <u>-9¢</u> | \$0.43 <u>-0.04</u> |
| | 2. 70 <u>-7</u> | 21 <u>-8</u> | 84 <u>-7</u> | 65 <u>-9</u> | 86 <u>-8</u> | 53 <u>-5</u> | 62¢ <u>-9¢</u> | \$0.71 <u>-0.03</u> |
| Set 35 | 1. 70 <u>-63</u> | 44 <u>-39</u> | 30 <u>-22</u> | 76 <u>-48</u> | 52 <u>-35</u> | 71 <u>-33</u> | 33¢ <u>-19¢</u> | \$0.91 <u>-0.56</u> |
| | 2. 54 <u>-46</u> | 91 <u>-44</u> | 85 <u>-66</u> | 40 <u>-27</u> | 53 <u>-15</u> | 72 <u>-14</u> | 61¢ <u>-59¢</u> | \$0.71 <u>-0.57</u> |

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| Set 36 | a | b | c | d | e | f | g | h |
| | 1. 56 | 58 | 54 | 47 | 52 | 60 | 56¢ | \$0.62 |
| | <u>-29</u> | <u>-39</u> | <u>-48</u> | <u>-28</u> | <u>-26</u> | <u>-25</u> | <u>-27¢</u> | <u>-0.48</u> |
| | 2. 43 | 82 | 45 | 30 | 21 | 42 | 33¢ | \$0.77 |
| | <u>-17</u> | <u>-27</u> | <u>-28</u> | <u>-18</u> | <u>-18</u> | <u>-29</u> | <u>-14¢</u> | <u>-0.39</u> |
| | | | | | | | | |
| Set 37 | 1. 83 | 65 | 91 | 24 | 73 | 64 | 48¢ | \$0.75 |
| | <u>-17</u> | <u>-49</u> | <u>-9</u> | <u>-11</u> | <u>-6</u> | <u>-27</u> | <u>-30¢</u> | <u>-0.54</u> |
| | | | | | | | | |
| | 2. 94 | 80 | 81 | 89 | 45 | 20 | 57¢ | \$0.90 |
| | <u>-15</u> | <u>-38</u> | <u>-48</u> | <u>-40</u> | <u>-7</u> | <u>-1</u> | <u>-28¢</u> | <u>-0.84</u> |
| | | | | | | | | |
| | 3. 86 | 62 | 75 | 42 | 23 | 24 | 42¢ | \$0.20 |
| | <u>-79</u> | <u>-37</u> | <u>-28</u> | <u>-18</u> | <u>-8</u> | <u>-6</u> | <u>-3¢</u> | <u>-0.06</u> |
| | | | | | | | | |
| Set 38 | 1. 48 | 47 | 81 | 28 | 83 | 91 | 67¢ | \$0.98 |
| | <u>-19</u> | <u>-29</u> | <u>-6</u> | <u>-14</u> | <u>-9</u> | <u>-37</u> | <u>-40¢</u> | <u>-0.27</u> |
| | | | | | | | | |
| | 2. 86 | 40 | 34 | 72 | 32 | 40 | 36¢ | \$0.60 |
| | <u>-27</u> | <u>-27</u> | <u>-28</u> | <u>-60</u> | <u>-6</u> | <u>-2</u> | <u>-18¢</u> | <u>-0.05</u> |
| | | | | | | | | |
| | 3. 75 | 72 | 75 | 52 | 48 | 21 | 34¢ | \$0.30 |
| | <u>-66</u> | <u>-45</u> | <u>-29</u> | <u>-24</u> | <u>-8</u> | <u>-2</u> | <u>-8¢</u> | <u>-0.09</u> |
| | | | | | | | | |
| Set 39 | a | b | c | d | e | f | g | |
| | 1. 12¢ | 46 | 12 | 26¢ | 35 | 23¢ | 44 | |
| | 16¢ | 16 | 12 | 45¢ | 19 | 18¢ | 26 | |
| | 17¢ | 12 | 38 | 10¢ | 22 | 21¢ | 16 | |
| | <u>+20¢</u> | <u>+14</u> | <u>+37</u> | <u>+17¢</u> | <u>+10</u> | <u>+16¢</u> | <u>+11</u> | |
| | | | | | | | | |
| | 2. 16¢ | 23 | 45 | 22¢ | 15 | 19 | 36 | |
| | 27¢ | 18 | 16 | 19¢ | 48 | 11 | 14 | |
| | 23¢ | 16 | 15 | 48¢ | 20 | 27 | 15 | |
| | <u>+13¢</u> | <u>+40</u> | <u>+23</u> | <u>+10¢</u> | <u>+14</u> | <u>+30</u> | <u>+24</u> | |
| | | | | | | | | |
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| | a | b | c | d | e | f |
|-----------|--------------|--------------|--------------|--------------|--------------|--------------|
| Set 40 | 1. \$0.39 | 17 | \$0.38 | 25 | \$0.48 | 24 |
| | 0.09 | 25 | 0.16 | 39 | 0.05 | 17 |
| | 0.27 | 34 | 0.26 | 15 | 0.27 | 18 |
| | <u>+0.10</u> | <u>+14</u> | <u>+0.04</u> | <u>+14</u> | <u>+0.15</u> | <u>+28</u> |
| | 2. \$0.07 | 32 | \$0.49 | 18 | \$0.28 | \$0.09 |
| | 0.28 | 29 | 0.17 | 19 | 0.02 | 0.12 |
| | 0.19 | 16 | 0.26 | 33 | 0.16 | 0.35 |
| | <u>+0.27</u> | <u>+19</u> | <u>+0.03</u> | <u>+21</u> | <u>+0.29</u> | <u>+0.18</u> |
| Set 41 | 1. \$0.29 | 15 | \$0.19 | 32 | \$0.56 | 49 |
| | 0.08 | 18 | 0.19 | 19 | 0.08 | 14 |
| | 0.26 | 22 | 0.06 | 18 | 0.18 | 12 |
| | <u>+0.32</u> | <u>+25</u> | <u>+0.54</u> | <u>+21</u> | <u>+0.03</u> | <u>+19</u> |
| | 2. \$0.18 | 25 | \$0.09 | 26 | \$0.18 | \$0.35 |
| | 0.05 | 12 | 0.32 | 28 | 0.02 | 0.12 |
| | 0.44 | 29 | 0.18 | 16 | 0.65 | 0.29 |
| | <u>+0.06</u> | <u>+18</u> | <u>+0.23</u> | <u>+19</u> | <u>+0.08</u> | <u>+0.18</u> |
| Set 42 | 1. 245 | \$4.57 | \$3.28 | 469 | 255 | 652 |
| | <u>+646</u> | <u>+5.04</u> | <u>+4.66</u> | <u>+426</u> | <u>+735</u> | <u>+239</u> |
| | 2. \$2.48 | 239 | 558 | 375 | \$4.39 | 536 |
| | <u>+7.04</u> | <u>+633</u> | <u>+426</u> | <u>+409</u> | <u>+5.41</u> | <u>+325</u> |
| | 3. 285 | \$2.35 | 376 | \$2.26 | 358 | 266 |
| | <u>+508</u> | <u>+5.36</u> | <u>+609</u> | <u>+3.44</u> | <u>+533</u> | <u>+506</u> |
| | | | | | | |
| | | | | | | |

| | a | b | c | d | e | f |
|---------------|---------------------------|------------------------|------------------------|--------------------|------------------------|------------------------|
| Set 43 | 1. 713 <u>+194</u> | 456 <u>+453</u> | 632 <u>+295</u> | 365 <u>+463</u> | 544 <u>+372</u> | 221 <u>+588</u> |
| | 2. 140 <u>+699</u> | 664 <u>+183</u> | 357 <u>+562</u> | 578 <u>+351</u> | 235 <u>+382</u> | 486 <u>+352</u> |
| Set 44 | 1. \$3.77 <u>+4.44</u> | 289 <u>+482</u> | \$1.85 <u>+5.35</u> | 568 <u>+257</u> | \$2.79 <u>+6.21</u> | \$3.75 <u>+3.67</u> |
| | 2. 249 <u>+289</u> | 358 <u>+472</u> | 537 <u>+165</u> | 179 <u>+755</u> | \$2.27 <u>+3.98</u> | \$4.86 <u>+1.69</u> |
| Set 45 | 1. \$4.75 <u>+3.89</u> | \$2.99 <u>+4.02</u> | \$2.48 <u>+4.83</u> | 476 <u>+464</u> | \$2.88 <u>+4.45</u> | \$3.21 <u>+4.89</u> |
| | 2. 257 <u>+156</u> | 487 <u>+287</u> | 484 <u>+269</u> | 287 <u>+373</u> | \$2.53 <u>+4.79</u> | \$2.44 <u>+4.66</u> |
| Set 46 | 1. 694 <u>-679</u> | \$9.85 <u>-3.47</u> | \$8.71 <u>-2.38</u> | 697 <u>-452</u> | 662 <u>-529</u> | \$8.91 <u>-8.03</u> |
| | 2. \$8.58 <u>-3.39</u> | 581 <u>-307</u> | 465 <u>-450</u> | 373 <u>-206</u> | \$9.49 <u>-6.37</u> | 982 <u>-877</u> |
| Set 47 | 1. 785 <u>-268</u> | \$8.75 <u>-3.46</u> | \$6.52 <u>-3.14</u> | 785 <u>-229</u> | 563 <u>-134</u> | \$9.23 <u>-1.09</u> |
| | 2. \$6.52 <u>-3.25</u> | 470 <u>-143</u> | 567 <u>-420</u> | 484 <u>-239</u> | \$9.87 <u>-2.59</u> | 582 <u>-436</u> |

| | | | | | | | | | |
|-----------|----|--------------|--------------|--------------|--------------|--------------|--------------|-----------|-----------|
| Set 48 | | a | b | c | d | e | f | | |
| | 1. | 449 | \$9.66 | \$5.39 | 719 | \$8.49 | 713 | | |
| | | <u>-155</u> | <u>-4.74</u> | <u>-1.84</u> | <u>-319</u> | <u>-6.78</u> | <u>-651</u> | | |
| | 2. | \$7.38 | 917 | 826 | 419 | \$8.33 | \$4.27 | | |
| | | <u>-5.97</u> | <u>-483</u> | <u>-375</u> | <u>-277</u> | <u>-2.72</u> | <u>-3.92</u> | | |
| | | | | | | | | | |
| Set 49 | 1. | 387 | \$4.68 | \$3.33 | 965 | \$7.49 | 818 | | |
| | | <u>-194</u> | <u>-1.82</u> | <u>-1.43</u> | <u>-391</u> | <u>-5.86</u> | <u>-196</u> | | |
| | | | | | | | | | |
| | 2. | \$5.27 | 958 | 649 | 835 | \$8.22 | \$5.55 | | |
| | | <u>-1.65</u> | <u>-295</u> | <u>-361</u> | <u>-452</u> | <u>-1.31</u> | <u>-3.74</u> | | |
| | | | | | | | | | |
| Set 50 | 1. | 456 | \$4.53 | 958 | \$5.21 | 535 | 792 | | |
| | | <u>-57</u> | <u>-2.04</u> | <u>-199</u> | <u>-0.62</u> | <u>-296</u> | <u>-275</u> | | |
| | | | | | | | | | |
| | 2. | \$9.44 | 762 | \$8.37 | \$6.22 | 973 | 757 | | |
| | | <u>-0.86</u> | <u>-177</u> | <u>-6.68</u> | <u>-3.43</u> | <u>-396</u> | <u>-389</u> | | |
| | | | | | | | | | |
| | 3. | \$7.56 | \$9.81 | 944 | 783 | \$4.32 | \$8.26 | | |
| | | <u>-6.78</u> | <u>-8.53</u> | <u>-579</u> | <u>-295</u> | <u>-0.84</u> | <u>-7.59</u> | | |
| | | | | | | | | | |
| Set 51 | 1. | 583 | \$3.43 | \$4.72 | 865 | \$7.21 | 865 | | |
| | | <u>-289</u> | <u>-1.68</u> | <u>-2.89</u> | <u>-279</u> | <u>-3.84</u> | <u>-498</u> | | |
| | | | | | | | | | |
| | 2. | \$6.45 | 521 | 762 | 438 | \$5.44 | \$2.32 | | |
| | | <u>-2.77</u> | <u>-235</u> | <u>-668</u> | <u>-238</u> | <u>-2.55</u> | <u>-1.56</u> | | |
| | | | | | | | | | |
| Set 52 | | a | b | c | d | e | f | g | h |
| | 1. | 2 | 3 | 7 | 2 | 9 | 2 | 4 | 2 |
| | | <u>×5</u> | <u>×2</u> | <u>×2</u> | <u>×6</u> | <u>×2</u> | <u>×8</u> | <u>×2</u> | <u>×2</u> |
| | 2. | 1 | 2 | 6 | 2 | 8 | 2 | 5 | 2 |
| | | <u>×2</u> | <u>×3</u> | <u>×2</u> | <u>×9</u> | <u>×2</u> | <u>×4</u> | <u>×2</u> | <u>×7</u> |
| | | | | | | | | | |

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|-----------|----|--------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|----------------|
| Set 53 | | a | b | c | d | e | f | | |
| | 1. | 502 <u>-124</u> | \$9.05 <u>-7.69</u> | 908 <u>-617</u> | \$8.09 <u>-2.83</u> | \$7.01 <u>-4.49</u> | 904 <u>-246</u> | | |
| | 2. | 902 <u>-896</u> | 905 <u>-557</u> | \$8.07 <u>-3.88</u> | 860 <u>-645</u> | \$6.12 <u>-0.73</u> | 809 <u>-537</u> | | |
| Set 54 | | a | b | c | d | e | f | g | h |
| | 1. | 3 <u>×2</u> | 4 <u>×3</u> | 6 <u>×3</u> | 3 <u>×3</u> | 3 <u>×1</u> | 8 <u>×3</u> | 3 <u>×5</u> | 1 <u>×3</u> |
| | 2. | 7 <u>×3</u> | 3 <u>×6</u> | 5 <u>×3</u> | 3 <u>×8</u> | 3 <u>×7</u> | 2 <u>×3</u> | 3 <u>×4</u> | 3 <u>×9</u> |
| Set 55 | | 1. | 800 <u>-197</u> | \$7.06 <u>-0.48</u> | \$3.00 <u>-0.78</u> | 905 <u>-239</u> | \$6.00 <u>-0.63</u> | \$5.00 <u>-1.89</u> | |
| | | 2. | 906 <u>-667</u> | 700 <u>-421</u> | \$4.00 <u>-0.85</u> | 600 <u>-531</u> | \$3.00 <u>-2.54</u> | \$6.00 <u>-2.69</u> | |
| | | 3. | \$6.00 <u>-3.32</u> | 404 <u>-319</u> | \$8.00 <u>-3.57</u> | 800 <u>-489</u> | 700 <u>-648</u> | 800 <u>-296</u> | |
| Set 56 | | 1. | 500 <u>-278</u> | \$3.08 <u>-1.59</u> | \$7.00 <u>-4.16</u> | 805 <u>-428</u> | \$3.00 <u>-2.38</u> | \$8.07 <u>-2.98</u> | |
| | | 2. | 900 <u>-362</u> | 804 <u>-577</u> | \$6.00 <u>-2.93</u> | 400 <u>-345</u> | \$5.05 <u>-2.87</u> | \$9.00 <u>-7.24</u> | |
| | | 3. | \$6.00 <u>-3.33</u> | \$4.06 <u>-2.09</u> | \$3.00 <u>-1.50</u> | \$7.00 <u>-2.27</u> | \$8.00 <u>-4.66</u> | 304 <u>-118</u> | |

| | a | b | c | d | e | f |
|-----------|-------------|-------------|-------------|-------------|--------------|--------------|
| Set 57 | 1. 681 | 163 | 445 | 136 | \$2.54 | \$3.72 |
| | 172 | 455 | 363 | 684 | 5.46 | 2.91 |
| | <u>+129</u> | <u>+367</u> | <u>+135</u> | <u>+146</u> | <u>+1.54</u> | <u>+2.18</u> |
| | 2. 255 | 146 | 324 | 217 | 365 | 138 |
| | 177 | 328 | 246 | 135 | 159 | 364 |
| | <u>+565</u> | <u>+384</u> | <u>+268</u> | <u>+475</u> | <u>+254</u> | <u>+496</u> |
| Set 58 | 1. 694 | 235 | 462 | 321 | \$2.55 | \$5.82 |
| | 138 | 435 | 399 | 469 | 3.66 | 2.46 |
| | <u>+143</u> | <u>+275</u> | <u>+137</u> | <u>+183</u> | <u>+2.77</u> | <u>+1.68</u> |
| | 2. 468 | 148 | 291 | 189 | 287 | 456 |
| | 217 | 331 | 248 | 234 | 315 | 238 |
| | <u>+123</u> | <u>+484</u> | <u>+237</u> | <u>+312</u> | <u>+236</u> | <u>+262</u> |
| Set 59 | 1. \$0.84 | 43 | \$0.32 | \$0.73 | 62 | 42 |
| | <u>×2</u> | <u>×3</u> | <u>×4</u> | <u>×3</u> | <u>×2</u> | <u>×3</u> |
| | 2. \$0.93 | 92 | \$0.31 | 93 | \$0.83 | \$0.52 |
| | <u>×2</u> | <u>×3</u> | <u>×5</u> | <u>×3</u> | <u>×3</u> | <u>×3</u> |
| Set 60 | 1. \$0.51 | 72 | \$0.53 | \$0.81 | 82 | 92 |
| | <u>×3</u> | <u>×2</u> | <u>×2</u> | <u>×2</u> | <u>×3</u> | <u>×2</u> |
| | 2. \$0.94 | 82 | \$0.61 | 63 | \$0.72 | \$0.62 |
| | <u>×2</u> | <u>×2</u> | <u>×2</u> | <u>×3</u> | <u>×3</u> | <u>×3</u> |
| Set 61 | 1. \$0.57 | \$0.23 | 48 | 85 | \$0.23 | \$0.67 |
| | <u>×2</u> | <u>×5</u> | <u>×3</u> | <u>×2</u> | <u>×9</u> | <u>×3</u> |
| | 2. \$0.96 | 32 | 32 | \$0.75 | 59 | \$0.57 |
| | <u>×2</u> | <u>×7</u> | <u>×8</u> | <u>×2</u> | <u>×3</u> | <u>×3</u> |

| | | | | | | | | |
|--------|------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|-------------------|-------------------|
| Set 62 | a | b | c | d | e | f | | |
| | 1. \$0.67 <u>×2</u> | 66 <u>×3</u> | \$0.44 <u>×3</u> | \$0.85 <u>×2</u> | 95 <u>×3</u> | 84 <u>×3</u> | | |
| | 2. \$0.55 <u>×3</u> | \$0.47 <u>×3</u> | 74 <u>×3</u> | \$0.68 <u>×3</u> | \$0.79 <u>×3</u> | 23 <u>×6</u> | | |
| Set 63 | 1. 309 <u>×3</u> | 304 <u>×2</u> | 102 <u>×6</u> | 103 <u>×9</u> | 203 <u>×4</u> | \$2.08 <u>×3</u> | | |
| | 2. 5 <u>×103</u> | 102 <u>×7</u> | 9 <u>×102</u> | 102 <u>×5</u> | \$1.03 <u>×6</u> | 8 <u>×103</u> | | |
| Set 64 | 1. 112 <u>×6</u> | 113 <u>×4</u> | 125 <u>×2</u> | 112 <u>×7</u> | 317 <u>×3</u> | \$1.13 <u>×5</u> | | |
| | 2. 129 <u>×3</u> | 113 <u>×7</u> | 216 <u>×2</u> | 112 <u>×5</u> | 127 <u>×2</u> | \$1.12 <u>×8</u> | | |
| Set 65 | a | b | c | d | e | f | g | h |
| | 1. $2\overline{)6}$ | $2\overline{)16}$ | $4\overline{)8}$ | $2\overline{)2}$ | $2\overline{)8}$ | $2\overline{)14}$ | $3\overline{)6}$ | $6\overline{)12}$ |
| | 2. $2\overline{)10}$ | $2\overline{)4}$ | $7\overline{)14}$ | $5\overline{)10}$ | $2\overline{)12}$ | $9\overline{)18}$ | $8\overline{)16}$ | $2\overline{)18}$ |
| Set 66 | 1. $3\overline{)9}$ | $2\overline{)6}$ | $6\overline{)18}$ | $3\overline{)6}$ | $3\overline{)18}$ | $5\overline{)15}$ | $3\overline{)24}$ | $7\overline{)21}$ |
| | 2. $3\overline{)15}$ | $8\overline{)24}$ | $3\overline{)21}$ | $9\overline{)27}$ | $4\overline{)12}$ | $3\overline{)27}$ | $3\overline{)3}$ | $3\overline{)12}$ |
| Set 67 | 1. 4 <u>×2</u> | 6 <u>×4</u> | 4 <u>×4</u> | 4 <u>×9</u> | 8 <u>×4</u> | 4 <u>×3</u> | 3 <u>×4</u> | 4 <u>×5</u> |
| | 2. 5 <u>×4</u> | 9 <u>×4</u> | 4 <u>×7</u> | 1 <u>×4</u> | 4 <u>×8</u> | 2 <u>×4</u> | 7 <u>×4</u> | 4 <u>×6</u> |

| | | | | | | | | |
|-----------|---|--|--|--|--|--|---|---|
| Set 68 | a | b | c | d | e | f | | |
| | 1. $\begin{array}{r} 168 \\ \times 3 \\ \hline \end{array}$ | $\begin{array}{r} 123 \\ \times 8 \\ \hline \end{array}$ | $\begin{array}{r} 309 \\ \times 3 \\ \hline \end{array}$ | $\begin{array}{r} 3 \\ \times 239 \\ \hline \end{array}$ | $\begin{array}{r} 123 \\ \times 7 \\ \hline \end{array}$ | $\begin{array}{r} 284 \\ \times 3 \\ \hline \end{array}$ | | |
| | 2. $\begin{array}{r} 497 \\ \times 2 \\ \hline \end{array}$ | $\begin{array}{r} 132 \\ \times 5 \\ \hline \end{array}$ | $\begin{array}{r} 2 \\ \times 175 \\ \hline \end{array}$ | $\begin{array}{r} 178 \\ \times 3 \\ \hline \end{array}$ | $\begin{array}{r} 356 \\ \times 2 \\ \hline \end{array}$ | $\begin{array}{r} 8 \\ \times 103 \\ \hline \end{array}$ | | |
| | 3. $\begin{array}{r} 385 \\ \times 2 \\ \hline \end{array}$ | $\begin{array}{r} 103 \\ \times 9 \\ \hline \end{array}$ | $\begin{array}{r} 295 \\ \times 3 \\ \hline \end{array}$ | $\begin{array}{r} 468 \\ \times 2 \\ \hline \end{array}$ | $\begin{array}{r} 247 \\ \times 3 \\ \hline \end{array}$ | $\begin{array}{r} 132 \\ \times 6 \\ \hline \end{array}$ | | |
| Set 69 | a | b | c | d | e | f | g | h |
| | 1. $\begin{array}{r} 4 \overline{)8} \end{array}$ | $\begin{array}{r} 2 \overline{)8} \end{array}$ | $\begin{array}{r} 4 \overline{)24} \end{array}$ | $\begin{array}{r} 4 \overline{)32} \end{array}$ | $\begin{array}{r} 5 \overline{)20} \end{array}$ | $\begin{array}{r} 9 \overline{)36} \end{array}$ | $\begin{array}{r} 4 \overline{)20} \end{array}$ | $\begin{array}{r} 6 \overline{)24} \end{array}$ |
| | 2. $\begin{array}{r} 7 \overline{)28} \end{array}$ | $\begin{array}{r} 4 \overline{)16} \end{array}$ | $\begin{array}{r} 8 \overline{)32} \end{array}$ | $\begin{array}{r} 4 \overline{)36} \end{array}$ | $\begin{array}{r} 3 \overline{)12} \end{array}$ | $\begin{array}{r} 4 \overline{)12} \end{array}$ | $\begin{array}{r} 4 \overline{)4} \end{array}$ | $\begin{array}{r} 4 \overline{)28} \end{array}$ |
| Set 70 | a | b | c | d | e | | | |
| | 1. $\frac{1}{3}$ of 18 | $\frac{1}{3}$ of 15 | $\frac{1}{4}$ of 24 | $\frac{1}{2}$ of 18 | $\frac{1}{3}$ of 27 | | | |
| | 2. $\frac{1}{2}$ of 14 | $\frac{1}{2}$ of 16 | $\frac{1}{4}$ of 36 | $\frac{1}{3}$ of 21 | $\frac{1}{4}$ of 32 | | | |
| Set 71 | a | b | c | d | e | f | | |
| | 1. $\begin{array}{r} 2 \overline{)48} \end{array}$ | $\begin{array}{r} 3 \overline{)33} \end{array}$ | $\begin{array}{r} 2 \overline{)64} \end{array}$ | $\begin{array}{r} 2 \overline{)88} \end{array}$ | $\begin{array}{r} 3 \overline{)63} \end{array}$ | $\begin{array}{r} 2 \overline{)26} \end{array}$ | | |
| | 2. $\begin{array}{r} 3 \overline{)93} \end{array}$ | $\begin{array}{r} 2 \overline{)46} \end{array}$ | $\begin{array}{r} 3 \overline{)66} \end{array}$ | $\begin{array}{r} 2 \overline{)82} \end{array}$ | $\begin{array}{r} 3 \overline{)96} \end{array}$ | $\begin{array}{r} 2 \overline{)68} \end{array}$ | | |
| | 3. $\begin{array}{r} 3 \overline{)36} \end{array}$ | $\begin{array}{r} 2 \overline{)44} \end{array}$ | $\begin{array}{r} 4 \overline{)84} \end{array}$ | $\begin{array}{r} 2 \overline{)84} \end{array}$ | $\begin{array}{r} 2 \overline{)22} \end{array}$ | $\begin{array}{r} 3 \overline{)69} \end{array}$ | | |
| | 4. $\begin{array}{r} 2 \overline{)86} \end{array}$ | $\begin{array}{r} 2 \overline{)28} \end{array}$ | $\begin{array}{r} 3 \overline{)39} \end{array}$ | $\begin{array}{r} 2 \overline{)66} \end{array}$ | $\begin{array}{r} 3 \overline{)99} \end{array}$ | $\begin{array}{r} 2 \overline{)24} \end{array}$ | | |
| Set 72 | 1. $\begin{array}{r} 3 \overline{)126} \end{array}$ | $\begin{array}{r} 6 \overline{)186} \end{array}$ | $\begin{array}{r} 2 \overline{)128} \end{array}$ | $\begin{array}{r} 9 \overline{)279} \end{array}$ | $\begin{array}{r} 2 \overline{)166} \end{array}$ | $\begin{array}{r} 3 \overline{)219} \end{array}$ | | |
| | 2. $\begin{array}{r} 2 \overline{)188} \end{array}$ | $\begin{array}{r} 8 \overline{)248} \end{array}$ | $\begin{array}{r} 3 \overline{)246} \end{array}$ | $\begin{array}{r} 5 \overline{)155} \end{array}$ | $\begin{array}{r} 7 \overline{)217} \end{array}$ | $\begin{array}{r} 2 \overline{)104} \end{array}$ | | |
| | 3. $\begin{array}{r} 6 \overline{)126} \end{array}$ | $\begin{array}{r} 2 \overline{)142} \end{array}$ | $\begin{array}{r} 5 \overline{)105} \end{array}$ | $\begin{array}{r} 3 \overline{)159} \end{array}$ | $\begin{array}{r} 9 \overline{)189} \end{array}$ | $\begin{array}{r} 4 \overline{)288} \end{array}$ | | |
| | 4. $\begin{array}{r} 7 \overline{)147} \end{array}$ | $\begin{array}{r} 3 \overline{)183} \end{array}$ | $\begin{array}{r} 8 \overline{)168} \end{array}$ | $\begin{array}{r} 6 \overline{)246} \end{array}$ | $\begin{array}{r} 4 \overline{)124} \end{array}$ | $\begin{array}{r} 4 \overline{)204} \end{array}$ | | |
| Set 73 | 1. $\begin{array}{r} 2 \overline{)126} \end{array}$ | $\begin{array}{r} 3 \overline{)186} \end{array}$ | $\begin{array}{r} 3 \overline{)279} \end{array}$ | $\begin{array}{r} 2 \overline{)186} \end{array}$ | $\begin{array}{r} 4 \overline{)168} \end{array}$ | $\begin{array}{r} 6 \overline{)186} \end{array}$ | | |
| | 2. $\begin{array}{r} 9 \overline{)189} \end{array}$ | $\begin{array}{r} 5 \overline{)205} \end{array}$ | $\begin{array}{r} 2 \overline{)148} \end{array}$ | $\begin{array}{r} 3 \overline{)189} \end{array}$ | $\begin{array}{r} 5 \overline{)155} \end{array}$ | $\begin{array}{r} 7 \overline{)287} \end{array}$ | | |
| | 3. $\begin{array}{r} 4 \overline{)248} \end{array}$ | $\begin{array}{r} 4 \overline{)124} \end{array}$ | $\begin{array}{r} 7 \overline{)147} \end{array}$ | $\begin{array}{r} 7 \overline{)217} \end{array}$ | $\begin{array}{r} 4 \overline{)208} \end{array}$ | $\begin{array}{r} 4 \overline{)324} \end{array}$ | | |

Vocabulary

The following list contains, by pages, the 188 new words used in this text, exclusive of proper names and abbreviations. These are in addition to 714 words which pupils are assumed to have learned in their reading and arithmetic work in Grades One and Two. With the exception of page 14, which contains the eight “-ty” names for 20 through 90, no page contains more than two new words, and each new word is used at least twice on the page.

| | | | |
|----------------------|---------------|-----------------|---------------------|
| 4. alike | 58. explain | 123. fair | 208. parents |
| pairs | 67. marching | 124. coin | 217. afternoon |
| 5. downward | won | 134. bulbs | office |
| read | 68. drawn | stage | 224. multiplying |
| 7. example | 69. oral | 136. total | product |
| 8. dolls | 71. list | 139. curtains | 226. multiplication |
| 9. problems | Wednesday | week | 227. cone |
| 12. game | 73. spelled | 140. carefully | scoops |
| 13. folded | 74. apart | 143. carry | 230. Easter |
| question | 75. eleven | ounces | hunt |
| 14. begins | Tuesday | 144. instead | 232. clerk |
| -ty numbers | 80. filled | 145. jars | soap |
| 15. figures | 82. arrows | 150. belong | 233. amount |
| 16. jack-o'-lanterns | point | 151. meat | 236. quart |
| 17. lot | 83. quarter | 152. words | 241. wearing |
| 20. cross | 84. edge | 153. Friday | 245. juice |
| 23. broken | spaces | 154. circle | 246. lollipops |
| 25. straws | 86. minus | size | 248. necklaces |
| 26. dominoes | plus | 155. rectangle | 250. fork |
| double | 88. tablets | squares | spoons |
| 28. order | Thursday | 158. movies | 252. August |
| shown | 90. cloth | 161. women | July |
| 30. bend | spent | 162. string | 255. bill |
| Monday | 93. chapter | 164. calendar | October |
| 32. ruler | 95. arm | dates | 259. pints |
| wide | 98. stamps | 166. June | 260. feed |
| 33. desk | 99. comparing | 167. slide | 261. sends |
| draw | differences | 168. borrowing | 265. seats |
| 35. card | 100. feet | 175. except | 270. beets |
| study | 101. checking | 176. sheets | bunch |
| 37. November | upward | wrote | 271. division |
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